

EPSON[®]
Equity[™] III
User's Guide

X-EQIII

EPSON[®]
Equity[™] III
User's Guide

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This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient the receiving antenna
- Relocate the computer with respect to the receiver
- Move the computer away from the receiver
- Plug the computer into a different outlet so that computer and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:

‘How To Identify and Resolve Radio-TV Interference Problems’

This booklet is available from the U.S. Government Printing Office, Washington DC 20402. Stock No. 004-000-00345-4.

Note: If the interference stops, it was probably caused by the computer or its peripheral devices. To further isolate the problem:

Disconnect the peripheral devices and their input/output cables one at a time. If the interference stops, it is caused by either the peripheral device or its I/O cable. These devices usually require shielded I/O cables. For Epson peripheral devices, you can obtain the proper shielded cable from your dealer. For non-Epson peripheral devices contact the manufacturer or dealer for assistance.

WARNING

This equipment has been certified to comply with the limits for a Class B computing device, pursuant to Subpart J of Part 15 of FCC Rules. Only peripherals (computer input/output devices, terminals, printers, etc.) certified to comply with the Class B limits may be attached to this computer. Operation with non-certified peripherals is likely to result in interference to radio and TV reception.

The connection of a non-shielded equipment interface cable to this equipment will invalidate the FCC Certification of this device and may cause interference levels which exceed the limits established by the FCC for this equipment.

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Introduction

Your Epson® Equity™ III personal computer is a versatile, high-performance system which offers you a wide variety of choices. First you choose between two models of the Equity III main unit, then you select the monitor and peripherals you want to use with it to assemble the configuration that does the most for you.

The Equity III main unit is available in these models:

- One 1.2MB (high-density) floppy disk drive
- One 1.2MB floppy disk drive and one 20MB internal hard disk drive

Both models include 640KB of memory. You can install additional drives in your Equity III to increase its storage capacity: a second floppy disk drive (either 360KB or 1.2MB) and one or more hard disks (20MB or 40MB, depending on your configuration).

Optional cards and external devices further expand the capabilities of your Equity III. Its built-in serial and parallel interfaces let you connect almost any peripheral device you choose. Here are some options you can use with your system:

- Monochrome monitor
- Monochrome video card
- RGB color monitor
- Color/graphics video card
- Memory expansion card
- 80287 Math coprocessor
- Mouse and mouse interface card
- An Epson printer or plotter

You can also use most cards for the IBM® Personal Computer, PC XT™, and PC AT™ on the Equity III. Check with your Epson dealer from time to time to find out which peripherals and option cards are available.

The Equity III comes with the MS[®]-DOS operating system and the GW[™]-BASIC programming language. If you have used MS-DOS before on another computer, you will find that it works the same on the Equity III. Be sure to refer to your Equity MS-DOS manual, however, for descriptions of the special utility programs added by Epson.

You may have purchased other software as well; you can use most software products designed for the IBM PC, PC XT, and PC AT on your Equity III. Refer to your software program documentation for information on using the software.

Additionally, the Equity III supports multi-user and multi-tasking with the appropriate operating system. Consult your Epson dealer for more information.

How to Use this Manual

This user's guide explains how to set up and care for your Equity III. It also describes how to start using your system and install optional devices.

Follow the instructions in Chapter 1 to set up your system. Chapter 2 tells you how to turn on the Equity III and describes some general operational procedures. Chapter 3 explains how disks and disk drives work and shows how to use them. Chapter 4 describes how to install and remove option cards. If you encounter a problem, refer to Chapter 5 on troubleshooting.

Appendix A presents the Equity III's hardware specifications and Appendix B is a glossary of computer terms this manual uses. Refer to the glossary whenever you come across an unfamiliar word. You may even want to glance through it before you start reading this book.

Although illustrations in this manual show the Equity III configuration with the internal hard disk, the setup and operational procedures apply to all configurations. You may not need to read everything in this book; some sections may describe a particular option or accessory you do not have.

Chapter 1

Setting Up Your System

It won't take you long to get your Epson Equity III personal computer up and running. This chapter describes the Equity III main unit and shows you how to set up your system and make any necessary adjustments.

Unpacking

When you unpack your Equity III, you should find the following:

- The main unit and power cord
- The keyboard with cable
- An MS-DOS operating system diskette (version 3.1) and a GW-BASIC programming language diskette with supplemental MS-DOS utilities
- An MS-DOS manual and a GW-BASIC manual
- A diagnostics diskette and a diagnostics manual
- This Equity III *User's Guide*

In addition to these items, you probably bought a compatible video monitor and video card, such as the Epson monochrome monitor MBM-2095-E and monochrome video card or the Epson RGB color monitor MCM-4035N-E and color/graphics video card.

As you remove your system components from their cartons, be sure to inspect each piece. If anything is missing, looks damaged, or seems wrong, consult your Epson dealer.

You'll also find a registration card with the main unit. Fill this card out now and mail it to Epson. With your registration card on file, Epson can send you update information.

Be sure to keep your packing materials. They provide the best protection possible for your computer if you need to move or ship it later.

Choosing a Location

Before you set up your new system, choose an appropriate place. Whether you use your computer at home or in the office, you need to find a comfortable, convenient location where it can run properly.

Choose a location that provides the following:

- A large, sturdy desk or table. Make sure it can easily support the weight of your system, including all its components.
- A flat, hard surface. Soft surfaces like beds and carpeted floors attract static electricity, which erases data on your disks and can damage the computer's circuitry. Soft surfaces also prevent proper ventilation.
- Good air circulation. Air must be able to move freely under the system as well as behind it. Leave several inches of space around the computer to allow ventilation.
- Moderate environmental conditions. You need to protect your computer from extremes in temperature, humidity, dust, and smoke. Avoid direct sunlight or any other source of heat. High humidity also hinders operation, so select a cool, dry area. Because you can't risk losing data stored on disk, do not expose your computer to dust and smoke which can damage disks and disk drives.
- Appropriate power sources. To prevent static charges, connect all your equipment to 3-prong, 120-volt *grounded* outlets. You need one outlet for the main unit, one for the monitor, and additional outlets for a printer and any other peripherals. The auxiliary power outlet on the rear panel of the Equity III reduces the number of wall outlets you need.
- No electromagnetic interference. Locate your system away from any electrical device that generates an electromagnetic field. Surprisingly even a telephone can cause trouble, especially if you keep diskettes right next to it.

When you find the ideal location for your Equity III, you can start to set up your system.

Arranging the Components

First decide how you want to arrange the different parts of your system. Figure 1-1 shows a typical setup.

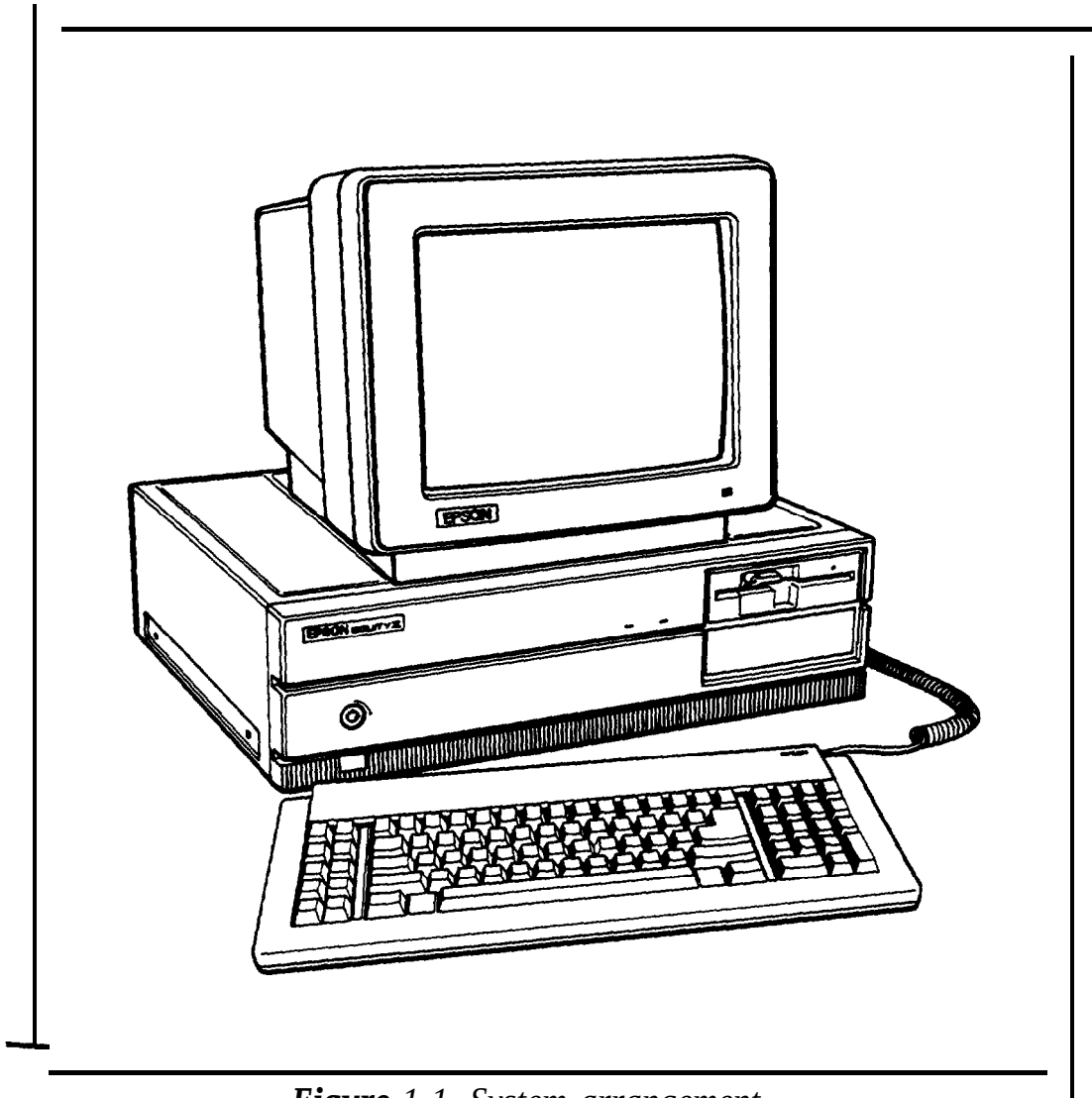


Figure 1-1. System arrangement

Of course, if you have special computer furniture *or* want to customize your setup, **you** can arrange your system components to suit your own particular needs.

Before you connect the cables, take a look at the front and rear panels of the main unit.

- Power LED lamp. A red light indicates the power is on. Use the power switch on the right side of the main unit to turn it on and off.
- Key Lock. Locks the main unit and keyboard. Turn the key clockwise to lock the computer and counterclockwise to unlock it. You can remove the key in either position.
- RESET button. Press this button to reset the computer. When an operating system diskette is in the top drive or running on the hard disk, you can press the RESET button to reboot it.

Removing the disk drive protector sheet

A cardboard sheet occupies the diskette slot in the floppy disk drive. This sheet is inserted at the factory to protect the read/write heads. Be sure to remove it before you connect any cables. Turn the latch that covers the disk slot counter clockwise until it is horizontal. Carefully pull out the sheet. If you have an optional 360KB drive as well, press the button marked PUSH to release the protector sheet.

Save the protector sheet and reinsert it whenever you move the computer, even if you just move it to another part of the room. If you don't plan to use your computer for a week or more, such as when you go on vacation, reinsert the protector sheet to help prevent dust from entering the disk drive.

The Rear Panel

Now look at the rear panel to identify the input/output ports. Figure 1-3 shows where you connect your peripherals.

WARNING: Connect all your peripherals before you plug in the power cable. After you plug in the power cable, always turn off the power switch before you connect or disconnect any peripheral.

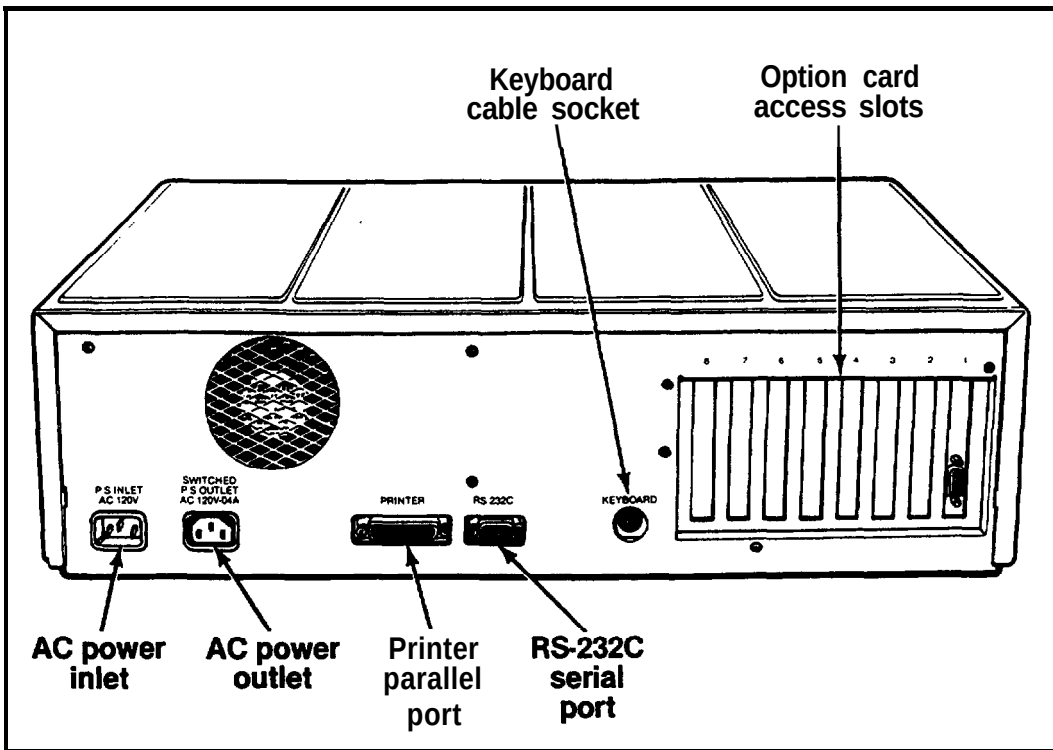


Figure 1-3. Rear panel

The rear panel components work as follows:

- AC Power inlet. Plug the power cord into the main unit here. Be sure the power switch is off when you plug the power cord into an outlet. Power consumption should not exceed 5 amps.
- AC Power outlet. Auxiliary power outlet. Some monitors (and other types of peripherals) can be plugged into the main unit here, instead of a wall outlet. The main unit's power switch controls the monitor or peripheral connected to this outlet. Power consumption should not exceed .4 amps.
- Printer parallel port. Allows you to connect a peripheral with a parallel interface, such as a printer or a plotter.
- RS-232C serial port. Allows you to **connect** a peripheral with a serial interface, such as a modem, another computer, or a printer.
- Keyboard cable socket. Plug in the keyboard cable here.

- Option card access slots. The Equity III has eight slots to hold up to eight option cards. Option cards allow your computer to control your peripherals or enhance your computer's performance. One option card slot holds the hard disk controller card and another must hold a monochrome or a color /graphics video card to control your monitor. You can use the other slots to install additional options, such as a memory expansion card or a mouse.

Connecting the Power Cord

Insert the power cord into the AC power inlet on the far left side of the rear panel, as shown in Figure 1-4. To avoid an electric shock, be sure to plug this end into the main unit before plugging the other end into the wall socket. For now, do not plug the power cord into an electrical outlet.

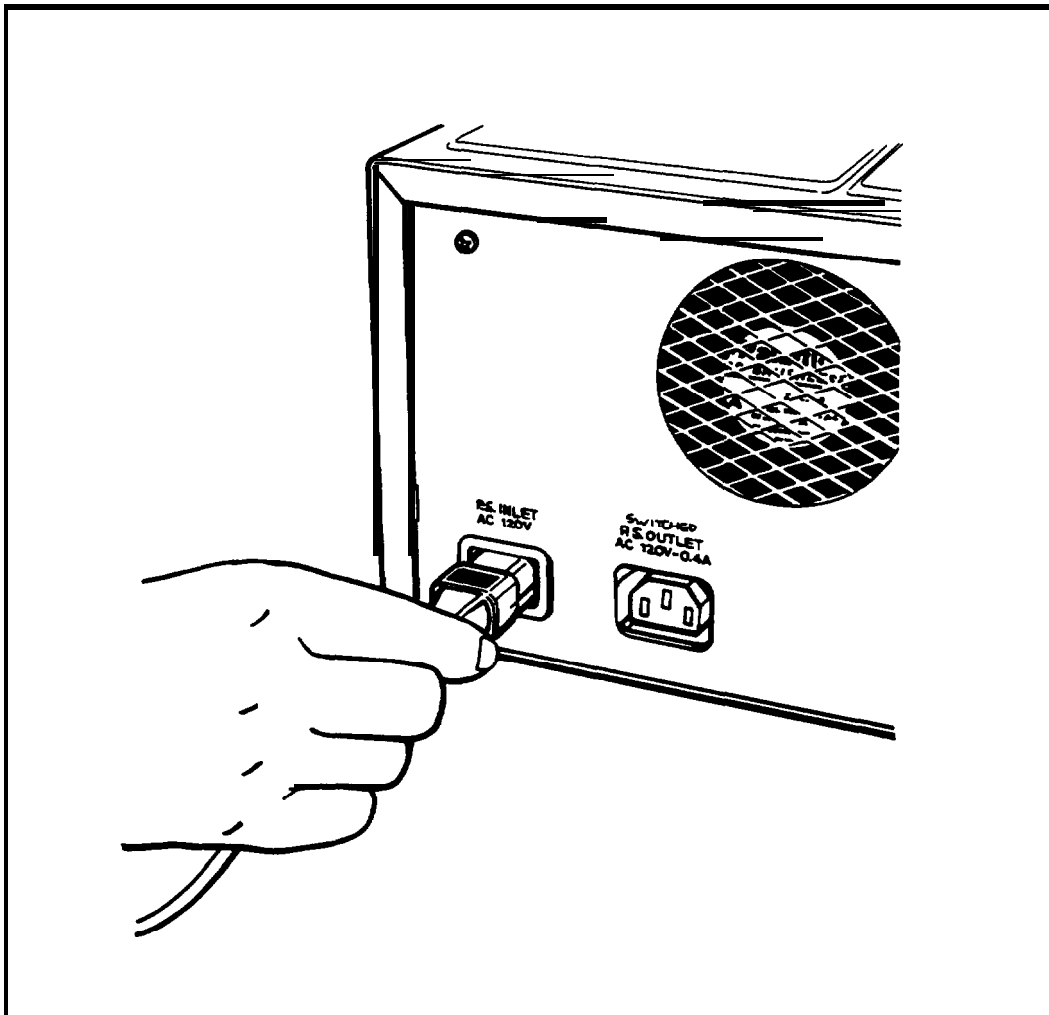


Figure 1-4. Connecting the power cord

Connecting a Video Monitor

To connect the video monitor, place your monitor on top of or near the Equity III main unit. It is easiest to connect the monitor cable if the backs of the monitor and the main unit face you.

Note: Your dealer probably installed a video card in your main unit to control your monitor. If not, you need to install it before you can connect your monitor. See Chapter 4 for instructions on how to remove the main unit's cover and install an option card. You also need to check DIP switch 1-2 inside the main unit to be sure it matches your monitor. See "Setting the DIP Switches" in Chapter 4.

The procedure you use to connect your monitor to the main unit depends on the type of monitor you have. Refer to your monitor manual for detailed instructions or follow these general guidelines:

1. If necessary, connect the monitor cable to the monitor. (Some monitors come with permanently attached cables.)
2. Connect the appropriate end of the monitor cable to your monochrome or color / graphics card connector at the back of the main unit, as shown in Figure 1-5. If the plug has retaining screws, tighten them with a screwdriver.

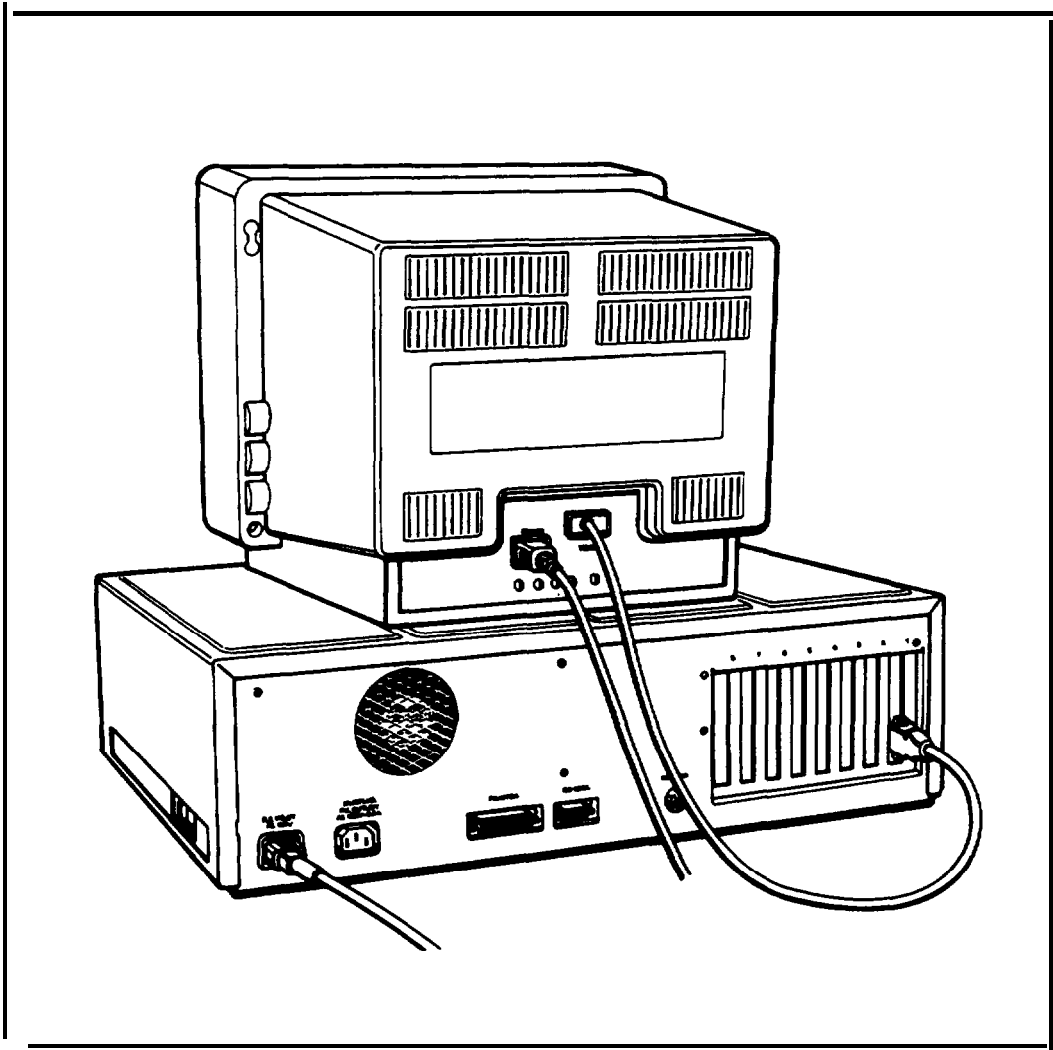


Figure 1-5. Connecting the monitor

The monitor type must match the video card in the main unit. If you have a color card, you can use one of two connectors: a nine-pin, female D-connector for RGB monitors or an RCA connector for composite video monitors.

3. Plug the monitor power cable into an electrical outlet.

Note: You can plug some monochrome monitors into the auxiliary outlet at the back of the Equity III main unit, if the plug fits and the monitor's power consumption does not exceed .4 amps.

Connecting the Keyboard

After you connect your monitor to the main unit, you can connect the keyboard. The keyboard cable is attached to the keyboard at one end. Insert the other end into the socket marked KEYBOARD on the rear panel of the main unit, as shown in Figure 1-6. Do not force the connector, but make sure you insert it all the way.

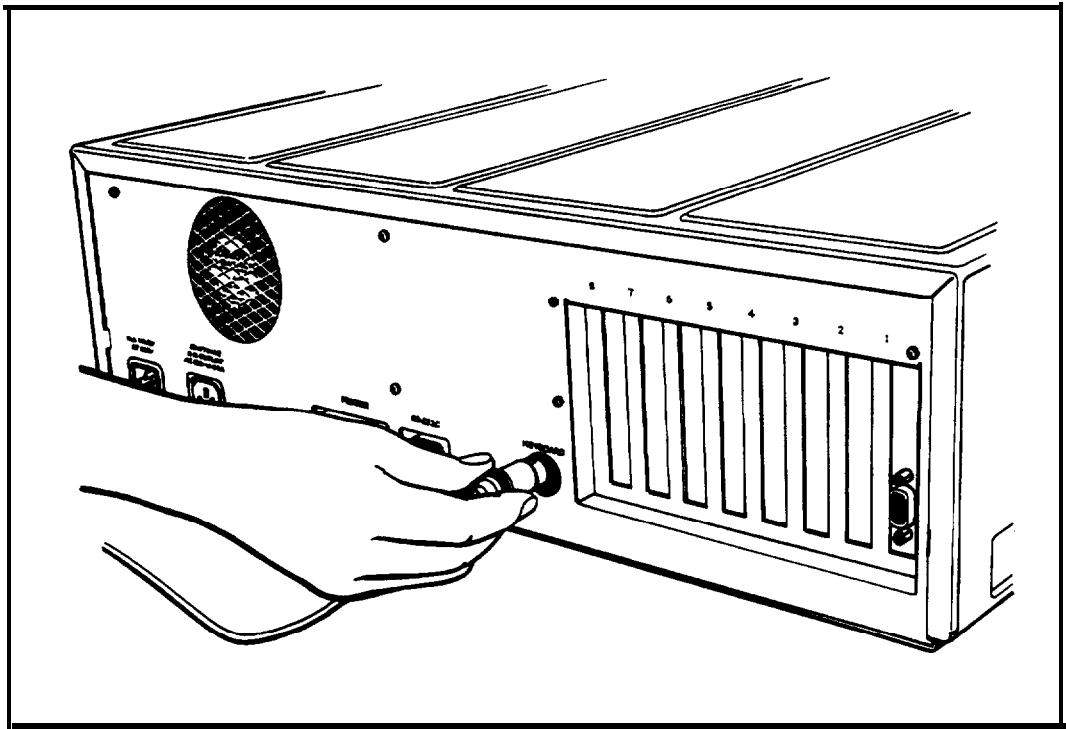


Figure 1-6. Connecting the keyboard

You can use the keyboard in various positions—including flat on a desk or on your lap. You can also tilt the angle of the keyboard by adjusting the legs on the bottom. To adjust the legs, turn the keyboard over and lift each leg upward until it locks into place, as Figure 1-7 shows.

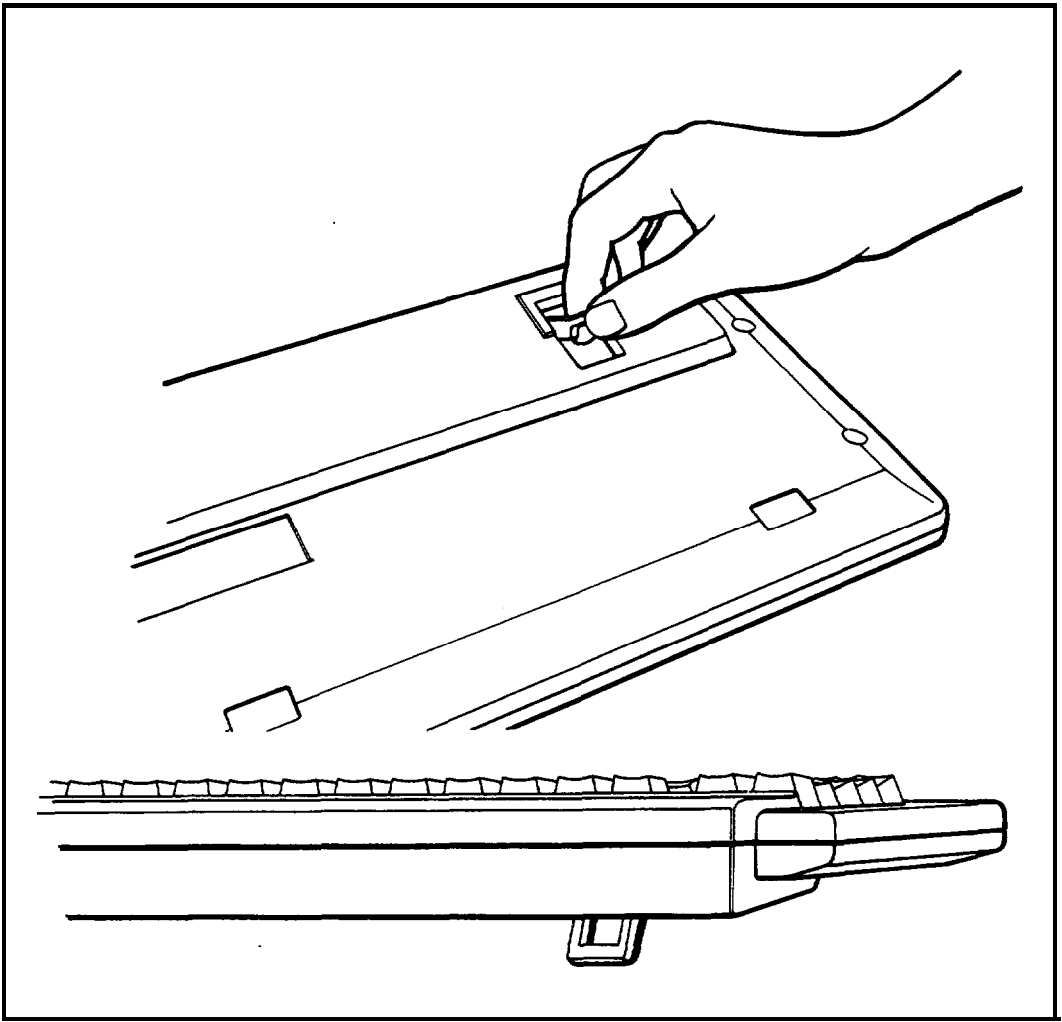


Figure 1-7. Adjusting keyboard legs

To disconnect the keyboard, unplug the connector from the rear panel. Be sure to pull the connector straight out from the main unit.

Connecting a Printer

The Equity III has built-in parallel and serial interfaces. You can easily connect a printer or plotter that has either type of interface—just follow the instructions below. Epson offers a full range of printer products. Consult your dealer for more information.

Parallel interface

The Equity III parallel interface is Centronics-compatible and uses a DB-25S connector. Most Epson printers have parallel interfaces.

To connect a printer to the main unit, you need an IBM PC AT-compatible printer cable. If you are not sure which one you need, consult your Epson dealer. Once you have a printer cable, follow these steps to connect your printer to the parallel interface on the main unit:

1. Place the printer next to your system, as shown in Figure 1-8.

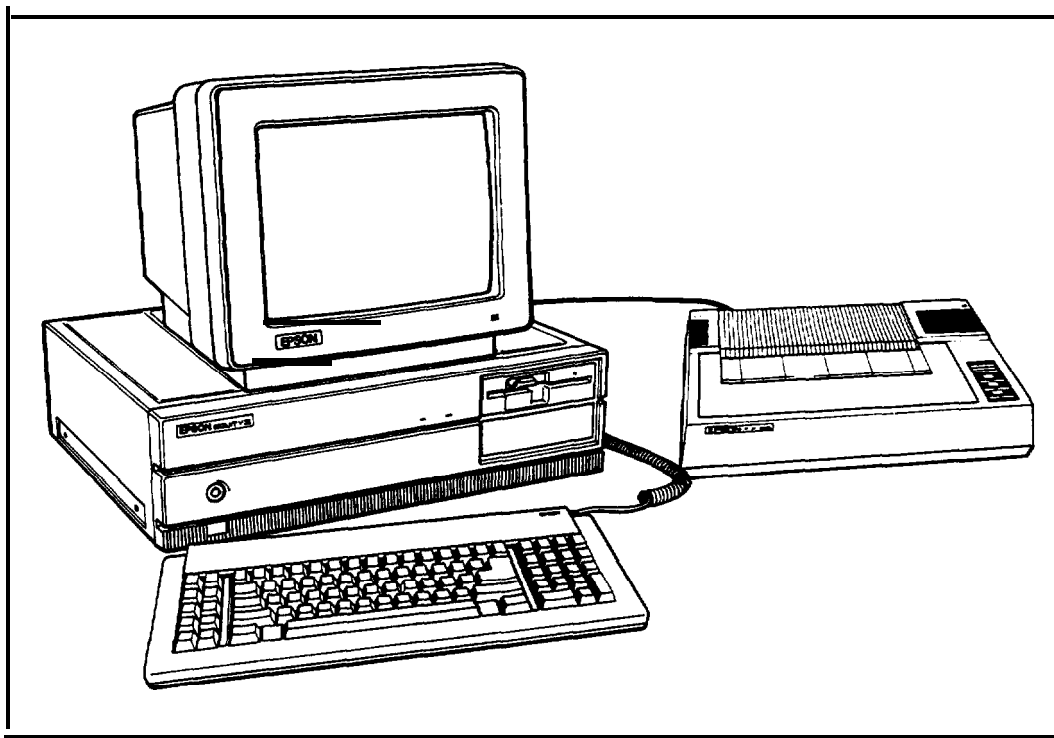


Figure 1-8. Placing the printer

2. Before you connect the printer, be sure the power switches on both the main unit and the monitor are off.
3. One end of the printer cable has a 25-pin male D-connector. (Refer to your printer manual to determine which end this is.) Connect this end to the socket marked PRINTER on the back panel of the main unit. If the plug has retaining screws, tighten them with a small screwdriver.
4. Connect the other end of the cable to the printer. To secure the cable, tighten the squeeze locks at each side of the printer port and push them into the connectors on each side of the cable. Figure 1-9 shows how to connect the cable to the printer.

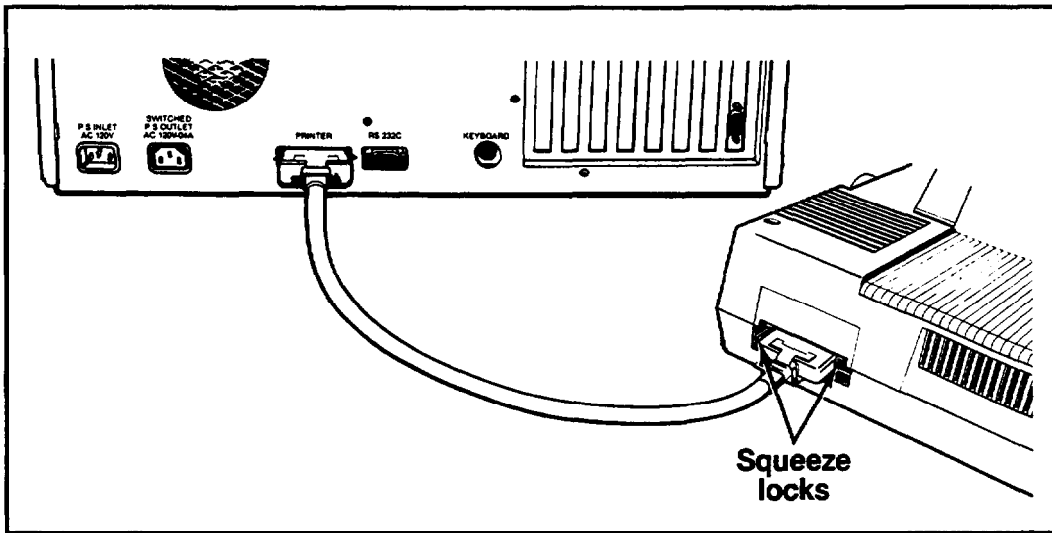


Figure 1-9. Connecting the printer

5. Plug the printer's power cable into an electrical outlet.

Serial interface

If you have a printer (or another peripheral such as a modem) with a serial interface, connect it to the port marked RS-232C at the back of the main unit. The Equity III uses a DB-9P connector, so be sure you have a compatible cable. To connect a serial device, follow the same steps above for connecting a parallel device.

You need to ensure the RS-232C serial port is set up so it functions properly. If you are using the port for a serial printer, you must also redirect printer output to the serial instead of the parallel port. Use the MS-DOS SETMODE program (or the MODE command) to make these changes. See your MS-DOS manual for instructions.

The Equity III character set

The Equity III uses a special character set that assigns graphics and international characters to some of the ASCII codes. In most cases, if you try to print these characters on a standard printer, you get italic characters instead. Some Epson printers support the IBM character set (the character set the Equity III uses) as a standard feature, and others can be adapted. In addition, some application programs can print the special graphic characters on a standard printer when you use a special printer driver program. Ask your Epson dealer for more information.

Checking the DIP Switches

Inside the Equity III main unit, there are ten DIP (dual-line package) switches which give your computer information about memory size, monitor type, floppy disk drive interface, and which built-in interfaces are in use. Each switch has two positions: on and off. You may need to change these settings if you add options (such as extra memory or disk drives) to your system.

Although your dealer probably set your DIP switches for you, you may want to look at the DIP switch settings in your main unit to be sure they match your system configuration. If your system does not work properly, check the DIP switches to see if they are set correctly.

To access the DIP switches, you need to remove the cover from the Equity III main unit. If you want to check them now, follow the instructions in Chapter 4 under “Removing the Cover” and then “Setting the DIP Switches.”

Chapter 2

Using the Equity III

After you set up your system, you're ready to turn on the power and start using your Equity III computer. But before you turn it on, read the following safety rules.

Safety Rules

Follow these rules to avoid accidentally damaging your computer or injuring yourself:

- Never turn the computer on or off with a protector sheet in the disk drive.
- Do not attempt to dismantle any part of the computer. Only remove the top cover to install and remove option cards or to set the DIP switches. If there is a hardware problem you cannot solve after reading Chapter 5 on troubleshooting, or if you want to install an optional 80287 math coprocessor, consult your Epson dealer.
- Always turn off the power, disconnect the computer's power cord, and wait a few minutes before you remove the computer's cover.
- Do not unplug cables from the computer when the power switch is on.
- Never turn off or reset your computer while a disk drive light is on. This can destroy data stored on disk or make a whole disk unusable.
- Always wait at least 5 seconds after you switch the power off before you switch it on again. Turning the power off and on rapidly can damage the computer's circuitry.
- Do not leave a beverage on top of or next to your system or any of its components. Spilled liquid can damage the circuitry of your components.

Key Lock

The key lock allows you to disable the keyboard and lock the top cover of the main unit for security. This provides a safeguard against someone accessing confidential information or altering your computer's internal hardware. The key lock also lets you run an application program, such as a screen demonstration, while disabling the keyboard so no one can alter the display. With the keyboard locked, the computer does not respond to anything you enter.

You can lock the system whether the power is on or off. To lock it, insert the key with the notch pointing up and turn it clockwise as shown in Figure 2-1. You need to press it in slightly when you turn it. To unlock it, insert the key with the notch pointing to the right and turn the key counterclockwise. You can remove the key in either position.

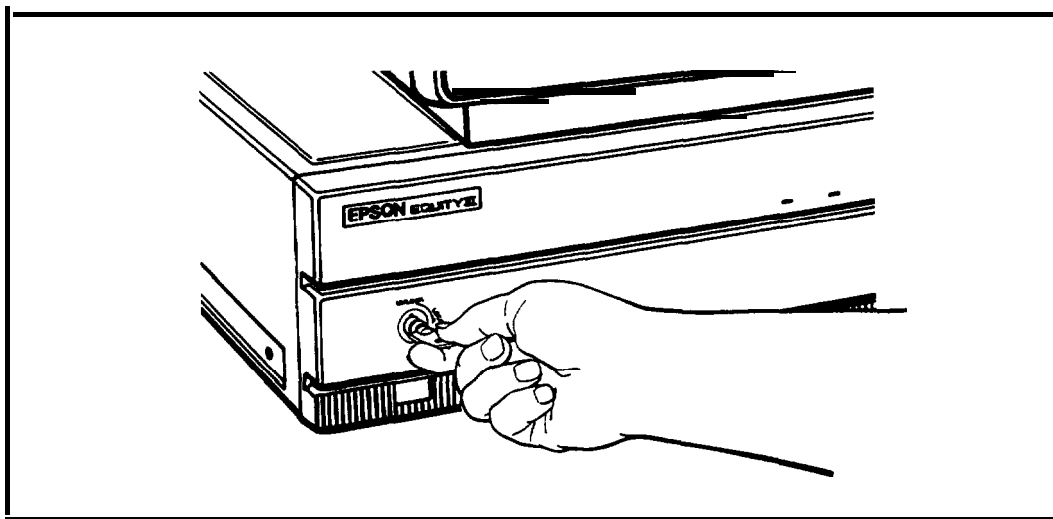


Figure 2-1. Locking the key lock

Your Equity III comes with two keys; it is a good idea to store them in different locations in case you misplace one. Store both keys where they are safe.

Be sure the computer is unlocked before you try to use the keyboard. Otherwise, it does not respond to anything you enter.

Powering Up

Now you are ready to turn on your system. It is a good idea to turn on the monitor and any peripheral devices before you turn on the main unit.

First, make sure the power cord is plugged into the power inlet on the rear panel of the main unit. Then plug the power cable into a 3-prong, 120-volt, grounded electrical outlet. Turn on the monitor so you can see the messages that appear as your computer starts up. If you have a printer or other peripheral device, turn it on next.

You can turn on your computer with or without a system diskette in the top disk drive. For now, leave the drive empty. To turn on the computer, press the power switch on the right side of the main unit. The power indicator on the front panel lights up and the cooling fan inside the main unit starts. After a few seconds, the computer begins to perform an internal self-test.

If you cannot see the screen display clearly, use the controls on your monitor to adjust the brightness and contrast until characters on the screen are clear and bright. If the display is not stable, check your monitor's horizontal and vertical hold controls.

Initial setup procedure

If this is the first time your Equity III has been used, you need to use the diagnostics diskette to perform an initial setup. This is a simple procedure which you must do at least once. You may need to do it again if you change your system configuration-by adding a disk drive, for example-or to change the system date or time. See your diagnostics manual for instructions.

Initial screen display

After the computer completes its self-test, a message tells you how much RAM (random access memory) is available:

nnn KB OK

Then the following message appears:

Non-System disk or disk error
Replace and strike any key when ready

This tells you the computer can now load an operating system from a diskette in the top drive. The Equity III needs a disk operating system (DOS) to function. It comes with MS-DOS version 3.1. If you want to use another operating system, consult your dealer.

To load an operating system, insert the system diskette you want to use (see ‘Inserting and Removing Diskettes’ below). Refer to your MS-DOS (or other operating system) manual for details on how to use the system.

Note: Use only a backup copy of the system diskette for daily use and keep the original in a safe place. See the operating system manual to find out how to make a backup copy.

If your system has a hard disk, you need to prepare it before you can run an operating system on it. Refer to ‘Using a Hard Disk Drive’ in Chapter 3 and to your MS-DOS (or other operating system) manual for instructions on how to prepare a hard disk for use.

If your hard disk has been properly prepared and set up to automatically boot MS-DOS, the message above does not appear. Instead, the operating system loads when you turn on the computer. The date and time prompts display and then the system prompt:

C>

This indicates the hard disk has been assigned as drive C.

Inserting and Removing Diskettes

To insert a diskette into a floppy disk drive, hold it with the label face up and the write-protect notch to the left (so that the read / write slot is away from you). Then slide it into the disk drive as shown in Figure 2-2. Be careful not to force it into the slot. When the diskette is all the way in, turn the latch clockwise until it locks into the vertical position. This keeps the diskette in place while you use it and enables the read / write heads in the disk drive to access the diskette.

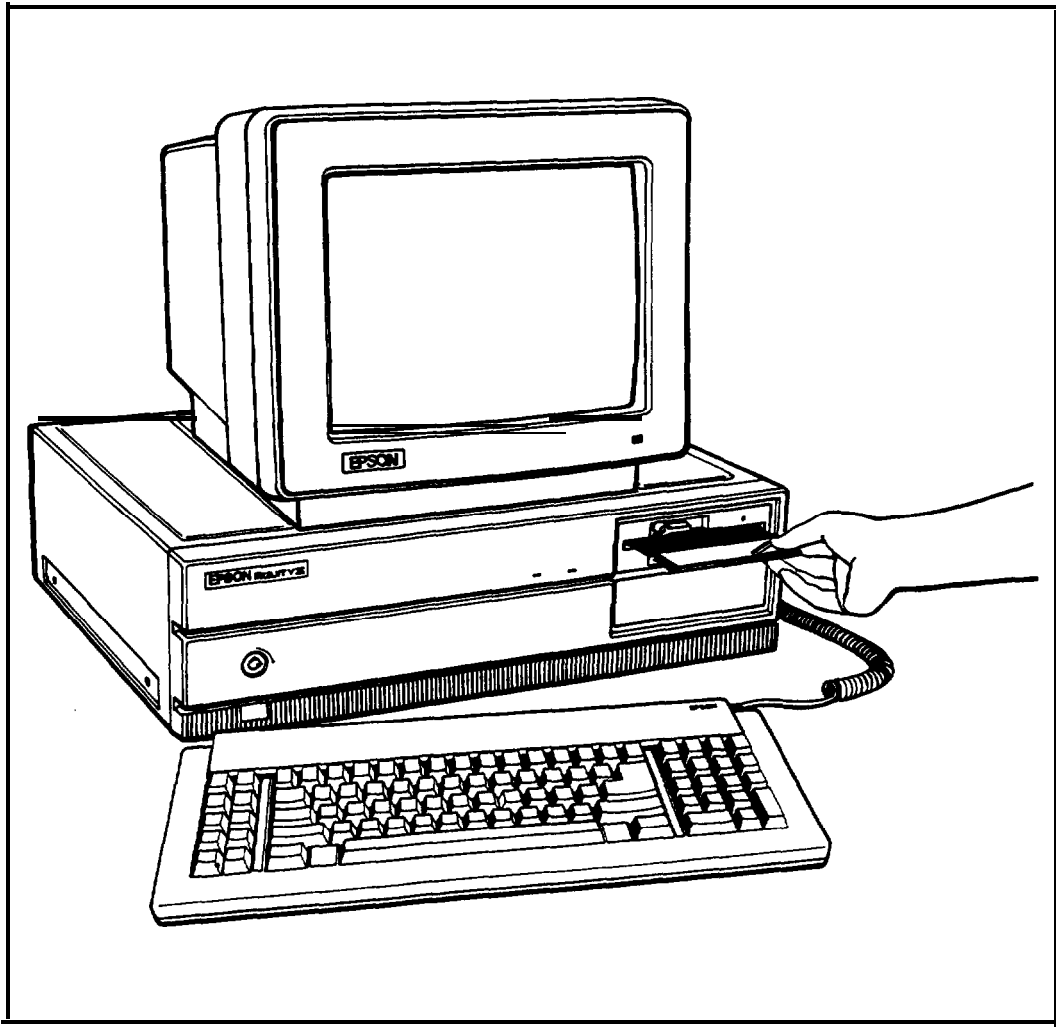


Figure 2-2. Inserting a diskette

To remove the diskette, turn the latch counterclockwise until it is horizontal and the diskette pops out. Carefully pull out the diskette, place it in its protective envelope, and store it properly, such as in a special diskette container.

If you have an optional 360KB floppy disk drive as well, insert the diskette the same way as for a 1.2MB drive. When it is all the way in, press the button labelled PUSH to lock it in place. To remove the diskette, press the PUSH button to release it and pull it out of the drive.

WARNING: Never remove a diskette or turn off the computer while the drive indicator light is on. You could lose data. Also, be sure to remove all diskettes before you turn off the computer.

Special Keys on the Equity III Keyboard

The dark gray keys on your keyboard serve special functions when your computer is running application programs. Figure 2-3 shows some of the more important keys and Table 2-1 describes them.

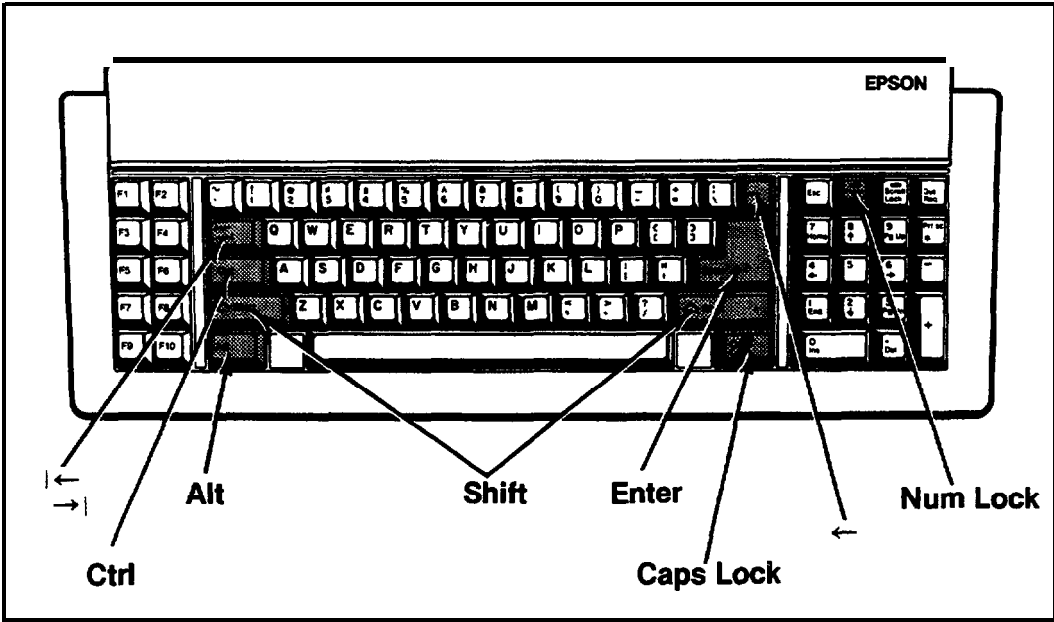


Figure 2-3. Special keys

Table 2-1. Special key functions

Key	Purpose
	Moves the cursor to the right in normal mode and to the left in shift mode. Referred to as-the tab key
Ctrl	Works with other keys to perform special (control) functions, such as editing operations in MS-DOS and GW-BASIC.
Shift	Produces uppercase characters or symbols when used with the main character keys. Produces lowercase characters when Caps Lock is on.
Alt	Works with other keys to enter alternate character codes not otherwise available on a standard keyboard.
Caps Lock	Changes the letter keys from lower- to uppercase; changes back to lowercase when pressed again.
Num Lock	Changes the function of the numeric/cursor keys from numeric to cursor positioning; changes back when pressed again.
Enter	Ends a line of keyboard input or executes a command.
	Moves the cursor back one space, deleting the character to the left. Referred to as the backspace key.

The keys that contain LED lights (**Num Lock**, **Scroll Lock**, **Caps Lock**) work as toggles when you press them. When the light is on, the function is enabled; when the light is off, the function is disabled.

Resetting the Computer

You can reset the computer to load a different operating system or to reload the current operating system. For example, if an error occurs and the computer does not respond to your keyboard commands, you can reset the computer and try the same operation again. However, resetting erases all data in the computer's temporary memory (RAM), so reset your computer only as a last resort.

In MS-DOS, you can hold down **Ctrl** and press C to stop a program's operation and return to the MS-DOS command prompt. If an error occurs, try this method before you reset the computer.

WARNING: Do not reset the computer to exit a program unless you have to. Some application programs classify and store new data whenever you exit the program properly. If you reset the computer while such a program is running, you may lose data.

There are three ways to reset. Because each is more powerful than the last, try them in the order listed here:

1. If you are using MS-DOS, hold down **Ctrl** and **Alt** and press the **Del** key on the numeric keypad at the right of the keyboard. The screen goes blank for a moment and then MS-DOS reloads. (MS-DOS must either be on the diskette or be autobootable from the hard disk.) If this does not correct the problem, try the second method.
2. Press the RESET button on the front panel. This method works even when the keyboard does not respond to your commands. If this does not correct the problem, try the third method.
3. Remove any diskettes from the floppy disk drives. Turn off the monitor and any peripheral devices and then turn off the Equity III using the power switch on the right side of the main unit. Wait 5 seconds and then switch the power back on.

Turning Off the Computer

Before you turn off your computer, exit the program you are using and then remove all diskettes from the disk drives. If you have a hard disk, it is a good idea to run the MS-DOS program HDSIT to move the disk drive's read/write heads away from the recording area before you turn off your computer. See your MS-DOS manual for instructions.

Turn off your monitor and peripherals first, then turn off the main unit using the switch on the right side. The red light on the front panel goes out.

Chapter 3

Using Disks and Disk Drives

The disk drives in your computer allow you to store data on disk, and retrieve and use stored data when you like. All Equity III systems have at least one floppy disk drive; you may also have a hard disk drive and/or a second floppy disk drive in your system. This chapter explains how disks work and tells you how to:

- Choose floppy disks
- Care for your disks and disk drives
- Protect your data
- Use a single floppy disk drive
- Use a hard disk drive

How Disks Work

The floppy disks (diskettes) you insert in your system's floppy disk drives are round pieces of flexible plastic coated with magnetic material and enclosed in protective jackets. Like a record, a diskette has circular tracks on both sides. The computer stores the data you enter as magnetic patterns on these circular tracks.

A small read/write head in the disk drive interprets the magnetic patterns. When a diskette is in a drive, the read/write head is right over the large oval hole in the diskette jacket. This hole allows the read/write head to access the diskette when you store, retrieve, and delete data.

Unlike a floppy disk, a hard disk is rigid and fixed in place. It is sealed in a protective environment free of dust and dirt, so you cannot see it. A hard disk stores data the same way as a floppy disk, only it works faster and has a much larger storage capacity.

Because data is stored magnetically you can retrieve it, record over it, and erase it—just as you play, record, and erase music on cassette tapes.

Choosing Diskettes for the Equity III

When you buy diskettes, be sure to choose high-quality diskettes with reinforced hub rings. The added reliability is well worth the extra cost. You also need to make sure you buy the proper format type for the drive(s) in your system.

The top floppy disk drive on the Equity III has a capacity of 1.2MB (megabytes) and uses **5¼-inch**, high-density, soft-sectored, 96 TPI (tracks per inch) diskettes. Each high-density diskette can hold 1.2MB of data, or about 450 pages of text. (One megabyte equals 1,048,576 bytes.) These diskettes are compatible with those the IBM PC AT uses, so you can use diskettes prepared by one computer on the other.

If you have a second 1.2MB floppy disk drive, use the same high-density diskettes described above.

If you have a second floppy disk drive that has a capacity of 360KB (kilobytes), use **5¼-inch**, double-sided, double-density, soft-sectored, 48 TPI diskettes in this drive. Each double-density diskette can hold 360KB of data, the equivalent of about 150 pages of text. (One kilobyte equals **1024** bytes.) These diskettes are compatible with those the IBM PC uses, so you can use diskettes prepared by one computer on the other.

You need to format new diskettes before you can use them with an operating system. Formatting erases all the data on a diskette and prepares it to receive new data, so be sure to format only new blank diskettes or diskettes that contain data you want to erase. Refer to your MS-DOS (or other operating system) manual for instructions on how to format diskettes.

Drive and diskette incompatibilities

You need to be aware of some incompatibilities between the 1.2MB and 360KB drives and the diskettes they use. These incompatibilities apply to diskettes from other compatible computers as well.

Although you cannot use highdensity diskettes in a 360KB drive, you can use double-density diskettes in a 1.2MB drive under the circumstances described below.

You can use a double-density diskette in a 1.2MB drive if you format it as a 360KB (or 320KB) diskette in the 1.2MB drive first. (Your MS-DOS or other operating system manual explains how to format a diskette in the density you choose.) After you do this, you can read it in

either type of drive, but write to that diskette only when it is in a 1.2MB drive. If you write to it in a 360KB drive, it may become unusable in both drives.

You can use a 1.2MB drive to read data from a double-density diskette that was formatted in a 360KB drive (for example, if you want to copy files from it). But do not write to this diskette while it is in a 1.2MB drive. If you do, the diskette may become unusable in both drives.

Here is a rule of thumb to follow: do not write to a diskette unless it was formatted in that drive (or the same type of drive on another computer). To avoid accidentally storing data on a diskette while it is in the wrong drive, you can place a write-protect tab on it before you insert it in the drive (see ‘Write-protecting diskettes’ below).

Because of these incompatibilities, always be sure to indicate density and drive type when you label your diskettes.

Table 3-1 shows what types of diskettes to use in the two types of drives.

Table 3-1. Drive/diskette compatibility

Drive type	Diskette types it can read from	Diskette types it can write to
360KB	double-density	double-density
1.2MB	high-density double-density	high-density double-density*

*Do not write to a double-density diskette in a 1.2MB drive unless it was formatted in that drive as a 360KB (or 320KB) diskette.

Note: Both types of drives on the Equity III can read and write to single-sided double-density diskettes. However, do not write to a single-sided diskette while it is in a 1.2MB drive unless it was formatted in that drive as a double-density diskette.

If you have both drive types (360KB and 1.2MB), you can copy files from one drive to another as long as the right diskette type is in each drive. You can also copy files between a hard disk and any type of diskette. See your MS-DOS or other software manual for instructions on how to copy files.

Caring for your Disks and Disk Drives

To avoid damaging floppy and hard disks, you need to care for them properly. Take these precautions to avoid losing data:

- Keep disks away from dust and dirt. Small particles of dust or dirt scratch the magnetic surface and can destroy data. Dust can also ruin the read/write heads in a disk drive.
- Keep disks away from magnetic fields. (Remember that disks store data magnetically.) There are many sources of magnetism in your home or office, such as electrical appliances, telephones, and especially loudspeakers.
- Keep disks in a moderate environment. They work best at room-temperature and in normal humidity. Never leave diskettes sitting in the sun, or in extreme cold or heat. The temperature in a car in the middle of summer or in the dead of winter can cause severe damage.
- Never touch a diskette's magnetic surface. The oils on your fingertips can damage it. Always hold a diskette by its protective jacket.
- Store diskettes properly. When they are not in use, keep diskettes in their protective envelopes and store them in a diskette container.
- Do not place anything on top of your diskettes and be sure they do not bend or sag. They do not rotate properly in the drive if damaged.
- Never wipe, brush, or try to clean diskettes in any way.
- Be careful when you label diskettes. Attach labels firmly but gently and only along the top of a diskette (next to the manufacturer's label). Do not place several labels on top of one another-too many labels can prevent a diskette from spinning freely in a disk drive.
- It is best to write on a label before you attach it to a diskette. Use only soft-tip pens (not ballpoint pens or pencils) to write on a label that is already on a diskette.
- Do not remove a diskette or turn off the computer while the drive light is on. This light indicates that the computer is copying data to or from a disk. If you interrupt this process, you can destroy data.
- Remove all diskettes before you turn off the computer.

If you have a hard disk drive, take these additional precautions:

- Never turn off the power to the computer when the hard disk drive light is on. This light indicates that the computer is currently copying data to or from the hard disk. If you interrupt this process, you can lose data.
- Never attempt to open the hard disk unit. The disk itself is enclosed in an air-tight container to protect it from dust.
- If you are going to move your computer (even to another part of the room), run the MS-DOS program HDSIT to move the read / write heads away from the recording area. See your MS-DOS (or other operating system) manual for instructions.

Protecting your Data

There are two ways to avoid losing data you store on disk: you can make backup copies and you can write-protect your diskettes.

Making backup copies

It is a good idea to make copies of all your data and system diskettes. Copy all diskettes that contain programs, such as the master system diskettes that come with the Equity III, and use only the copies. Store your original system diskettes in a safe place away from your working diskettes. Copy your data diskettes regularly (preferably every day) to keep them up-to-date, and store them away from your originals.

Your MS-DOS manual describes how to make a backup copy of your MS-DOS system diskette. To make backups of your other MS-DOS diskettes, use the DU (Disk Utility) program or the DISKCOPY command.

If you have a hard disk, keep backup copies of all your program files on floppy disks, and regularly copy important data files to floppy disks as well. For more information on backing up a hard disk, see ‘Using a Hard Disk,’ below.

Write-protecting diskettes

The right edge of a diskette has a small, rectangular notch as shown in Figure 3-1. If you can see this notch, you can copy new data to the diskette. If you cover the notch with an adhesive write-protect tab, you can copy data from the diskette, but you cannot store new data on it or

delete any files it contains. If you try to change data stored on a write-protected diskette, an error message tells you the diskette is write-protected. Write-protect tabs usually come with new diskettes when you buy them.

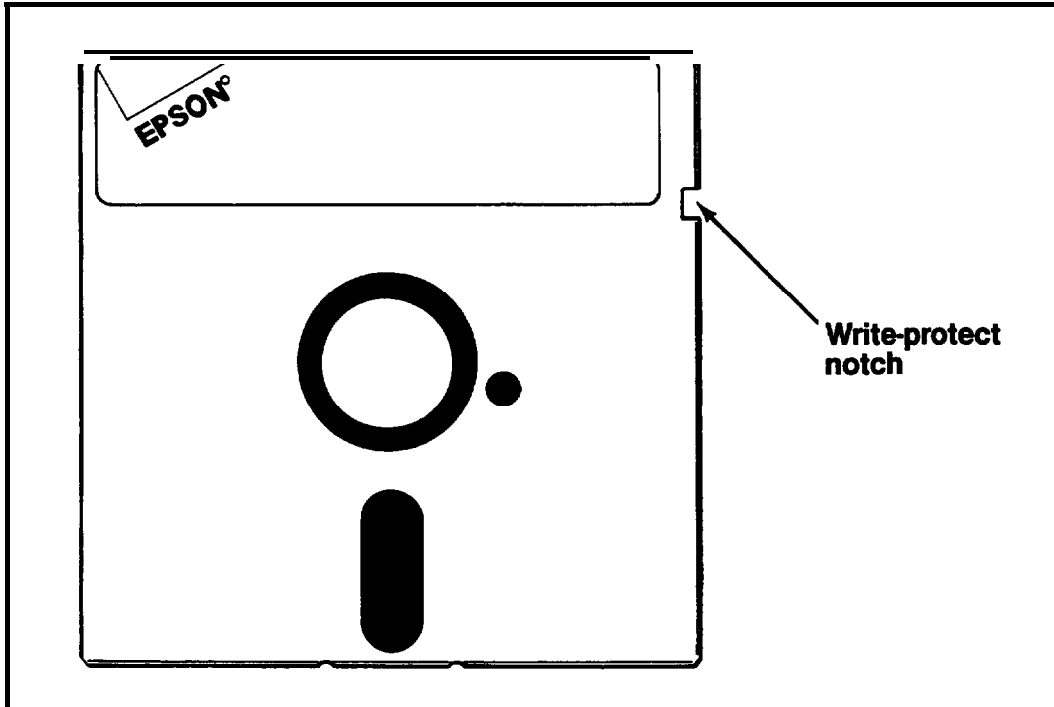


Figure 3-1. Write-protect notch

Using a Single Floppy Disk Drive

Usually operating systems expect the computer to have at least two physical disk drives and display prompts and messages accordingly. If your system has a single floppy disk drive, MS-DOS treats your single drive like two logical drives. This helps you perform operations that normally require two floppy disk drives.

For example, if you give a command to copy from one drive to another, MS-DOS copies from the first diskette you place in the drive to the computer's memory. Then MS-DOS prompts you to insert another diskette and copies from memory to the diskette you place in the drive. When copying is complete, you see a prompt to insert the original diskette.

Because you may swap diskettes this way often, it is easy to forget which diskette is which. One way to avoid accidentally losing data is to hold the diskette for one drive in your left hand and the diskette for the other in your right. You can also place a write-protect tab on your source diskette. For more information on using a single floppy disk drive with MS-DOS, see your MS-DOS manual.

Using a Hard Disk Drive

The internal hard disk for the Equity III has a capacity of 20 megabytes-about 20 million characters. This is equivalent to approximately 60 double-density floppy disks. Using a hard disk reduces the number of floppy disks you need and eliminates much of the disk-swapping you do when you use floppy disks. You can do almost all of your work on the hard disk and copy your files to floppy disks as needed (to make backups, for example).

Although the hard disk is very reliable, it is essential to back up all your hard disk files on floppy disks in case you lose some data accidentally. Use the MS-DOS ARCHIVE program to back up your hard disk files.

Although it has a lot of storage space, keep only files you use regularly on the hard disk, to ensure you always have plenty of space available. Store your other files on floppy disks.

Before you can use the Epson internal hard disk, you must do the following things to prepare it:

- Use the MS-DOS SETUP program to tell your system it has a hard disk.
- Partition the hard disk to run the MS-DOS operating system using the MS-DOS program HDPART
- Format the MS-DOS partition with the MS-DOS program HDFORMAT and include the /S option to copy the MS-DOS operating system to the hard disk.
- Copy the MS-DOS utility programs to the hard disk using XTREE[®] or the Copy command.

Your MS-DOS system diskette contains all of these programs. For instructions on how to use them, refer to your MS-DOS manual.

Note: If you plan to use an operating system other than MS-DOS, you need to use that operating system to partition the hard disk and copy the system files to it.

The Epson hard disk is formatted at the factory. Therefore, you need not format it before you partition it to run your operating system. If you have serious read/write problems when you use it, you can format the entire disk as a last resort. Follow the instructions in your Diagnostics manual and pay attention to all the precautions before you format the entire hard disk.

Chapter 4

Installing Option Cards

Option cards are accessories you can install in your Equity III to provide extra capabilities. For example, you can add another disk drive, expand the computer's internal memory up to 15.5MB, or connect a mouse.

The Equity III has eight option card slots, so it can hold up to eight cards. A hard disk controller card occupies one slot (whether or not your system has a hard disk) and a card for your monitor occupies another.

You can buy option cards from Epson as well as other vendors. Multifunction cards that allow you to add features without using multiple option card slots are also available. Consult your dealer for more information.

This chapter describes how to:

- Remove and replace the main unit's cover
- Install and remove an option card
- Set the DIP switches

Removing the Cover

To install an option card or change DIP switch settings, you need to remove the cover from your Equity III.

WARNING: Never open the cover of the Equity III while it is plugged into an electrical outlet. Before you open the cover, turn off the power switches on the main unit and each peripheral, let the computer stand for a few minutes, and then unplug the power cable.

1. If the monitor is on top of the computer, move it to one side.
2. If the computer is locked, unlock it now (with the key lock). Otherwise, you cannot take the cover off your system.
3. As shown in Figure 4-1, the top cover is secured by four screws, two on each side of the computer. Remove the screws on both sides of the computer and put them all safely to one side.

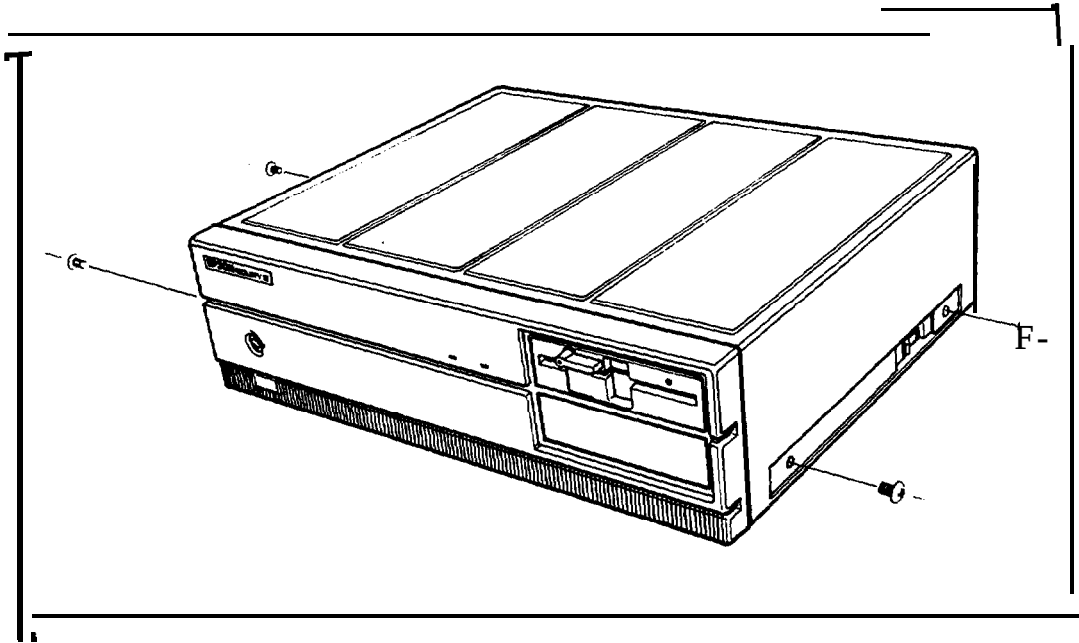


Figure 4-1. Top cover screws

4. Turn the main unit around so the rear panel faces you. Hold on to the two sides of the cover and carefully slide it straight back toward you, away from the front of the computer, as shown in Figure 4-2. Then lift the cover off and set it aside.

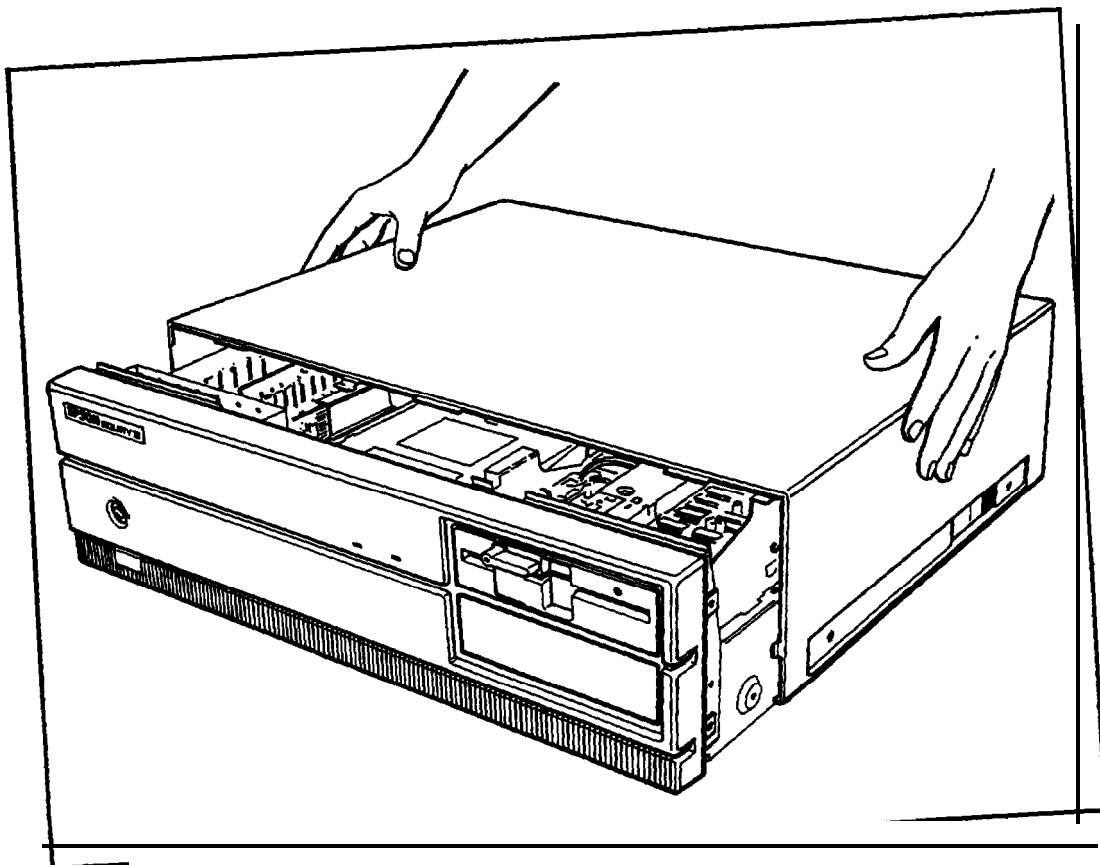


Figure 4-2. Removing the cover

Installing an Option Card

Figure 4-3 shows the eight option slots in the Equity III.

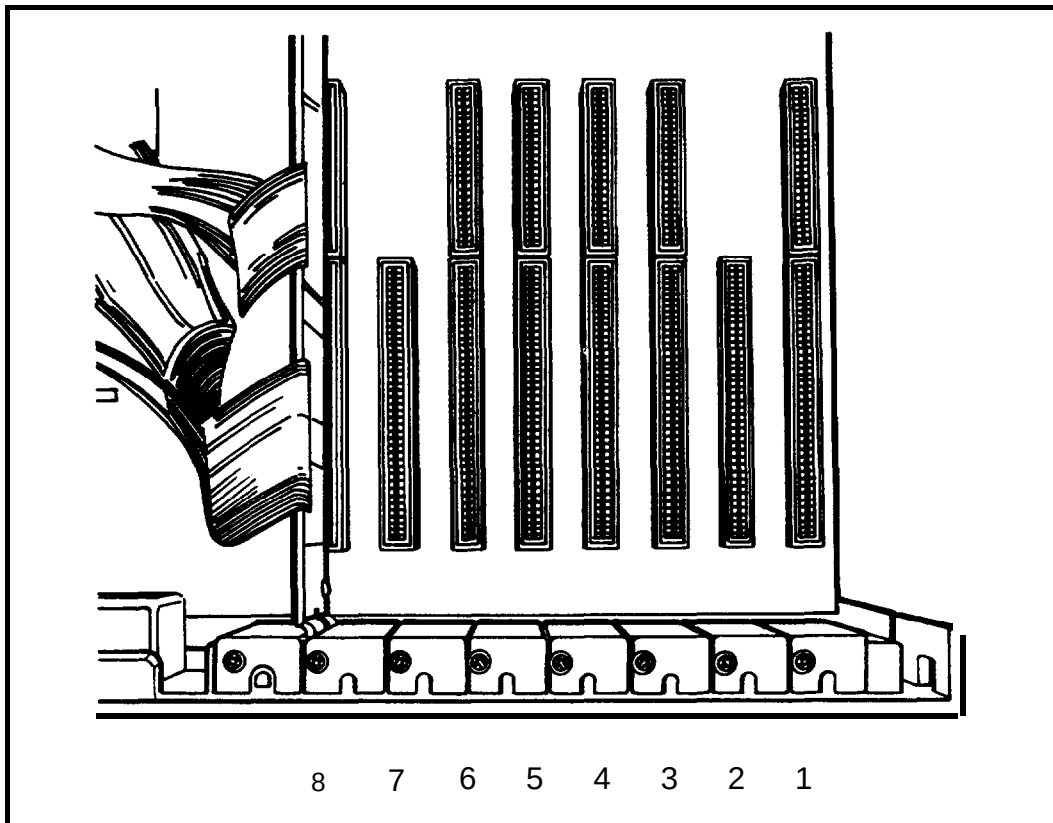


Figure 4-3. Option slots

Slots 2 and 7 are designed for 8-bit option cards and the other six-slots 1, 3 through 6 and 8-are designed for 16-bit option cards. Figure 4-4 shows both types of cards. As you can see, the X-bit card has a second connector.

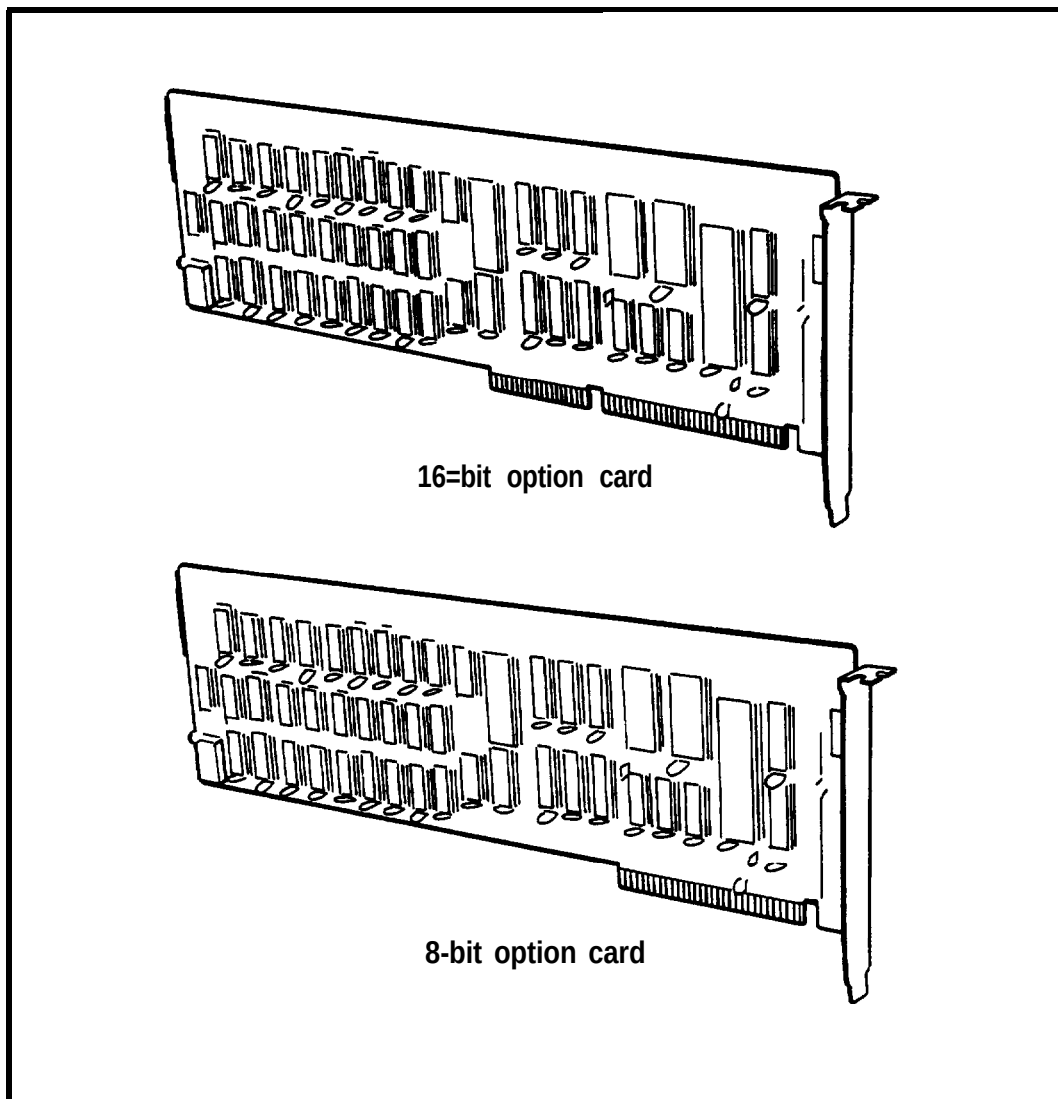


Figure 4-4. 16-bit and 8-bit option cards

As long as the card fits in the slot, it does not matter which slot an option card occupies. (For example, you can place some 8-bit cards in a 16-bit slot.) However, some cards work only in a specific slot. If you have Such a card, the instructions that come with it specify which slot you need to use. Because the hard disk controller card must be connected to the hard disk, this option card is in slot 8, where it is closest to the hard disk. Leave it there.

Option cards fit in the slots only one way but be sure to examine the card first and follow the instructions closely.

1. Decide which option slot you want to use and then remove the retaining screw from the top of the metal slot cover on the rear panel. Keep the screw to secure the option card to the computer. Lift out the cover and keep it in a safe place in case you remove the option card later.
2. Unpack the option card and adjust any switches or jumper connections on it if necessary. (For example, a memory expansion card usually contains DIP switches that you need to set. See the option card instructions.) When you handle the card, be careful not to touch any of the contacts on the circuit board, especially the gold-edge connections. If you need to put it down before you install it, place it on top of its original packing material with the component side facing down.

Note: Pay attention to the warnings in your option card instructions. Most cards have delicate static-sensitive components that you should not touch.

Keep the card's packing materials in case you remove the card later.

3. Grip the card firmly by the top corners and position it at the top of the slot. Make sure the contact pins point down and the components face the inside of the main unit.
4. Slide the card straight into the slot as shown in Figure 4-5, guiding it down the black plastic guide plate at the front end of the computer. When the card is almost all the way in, make sure the tab at the bottom of the metal adapter plate on the end of the card goes into the corresponding notch at the back of the computer.

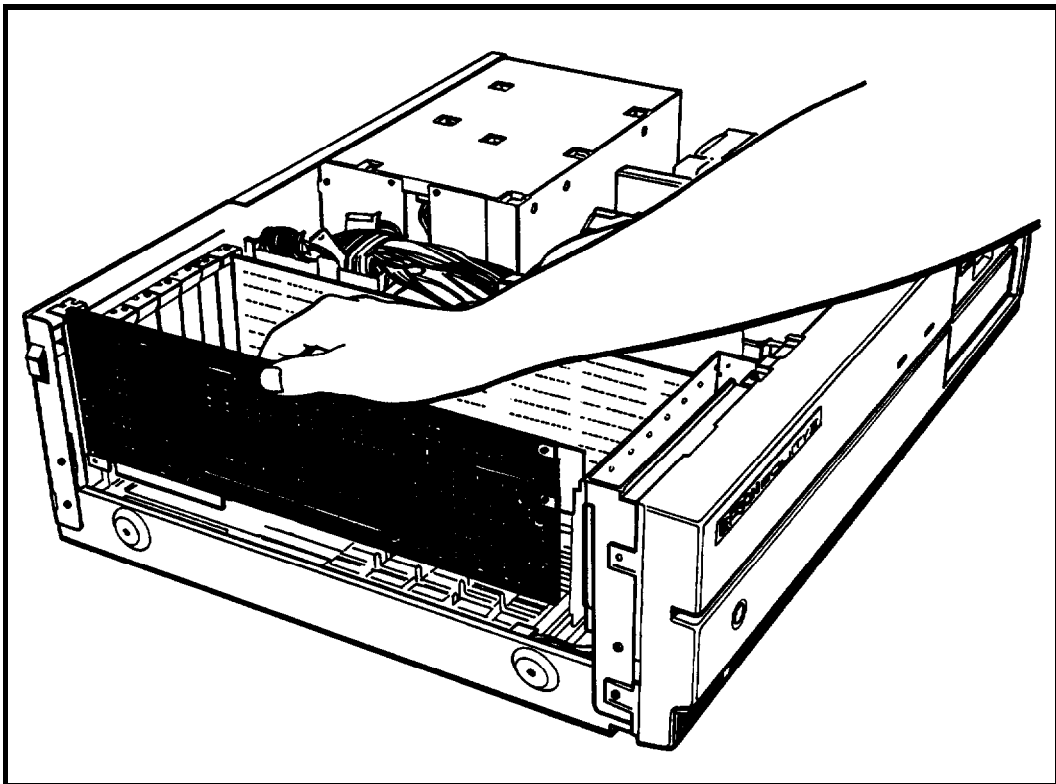


Figure 4-5. *Inserting an option card*

5. Once the connector pins are sitting in the connector slot, push the card downward firmly (but carefully) to fully insert it. If the card does not go in smoothly, do not force it—pull it all the way out and try again, being sure to keep it straight.
6. Secure the adapter plate on the end of the card to the back of the computer with the retaining screw.
7. If necessary, change the **DIP switches** inside the main unit. See “Setting the DIP Switches,” below.

Post-installation Setup

After you install an option card (and replace the main unit's cover and reconnect the power cord and peripherals), you need to run the SETUP program on the diagnostics diskette to update the configuration information. For example, if you add a hard disk, you need to run SETUP to tell the computer that it has the additional drive. See your diagnostics manual for instructions.

Removing an Option Card

To remove an option card, follow the same basic procedure you used to install it. Turn off the computer, monitor, and all peripherals, and **disconnect** all the cables. Then remove the main unit's cover.

To remove the card, take out the screw holding the adapter and pull the card straight up and out of the connector. Then carefully wrap the card, preferably with the original packing materials, and place it inside its box for safe storage. Cover the end of the empty option slot with the original metal cover and retaining screw.

If necessary, reset the DIP switches inside your main unit. Also, if you previously changed some operating system settings in the diagnostics SETUP program for the option card (to use a hard disk, for example), you need to change these settings back to their original values.

Setting the DIP Switches

If you change the configuration of your Equity III (for example, by adding a disk drive or a monitor, or by expanding its memory), you may need to change the DIP switch settings. Figure 4-6 shows the location of the DIP switches inside the Equity III main unit.

There are two sets of switches; one has six switches and the other has four. Table 4-1 shows the DIP switch functions and the descriptions below explain what each switch does. When a switch is up, it is on. When a switch is down, it is off. To change a setting, use a hard, thin object, such as a small screwdriver.

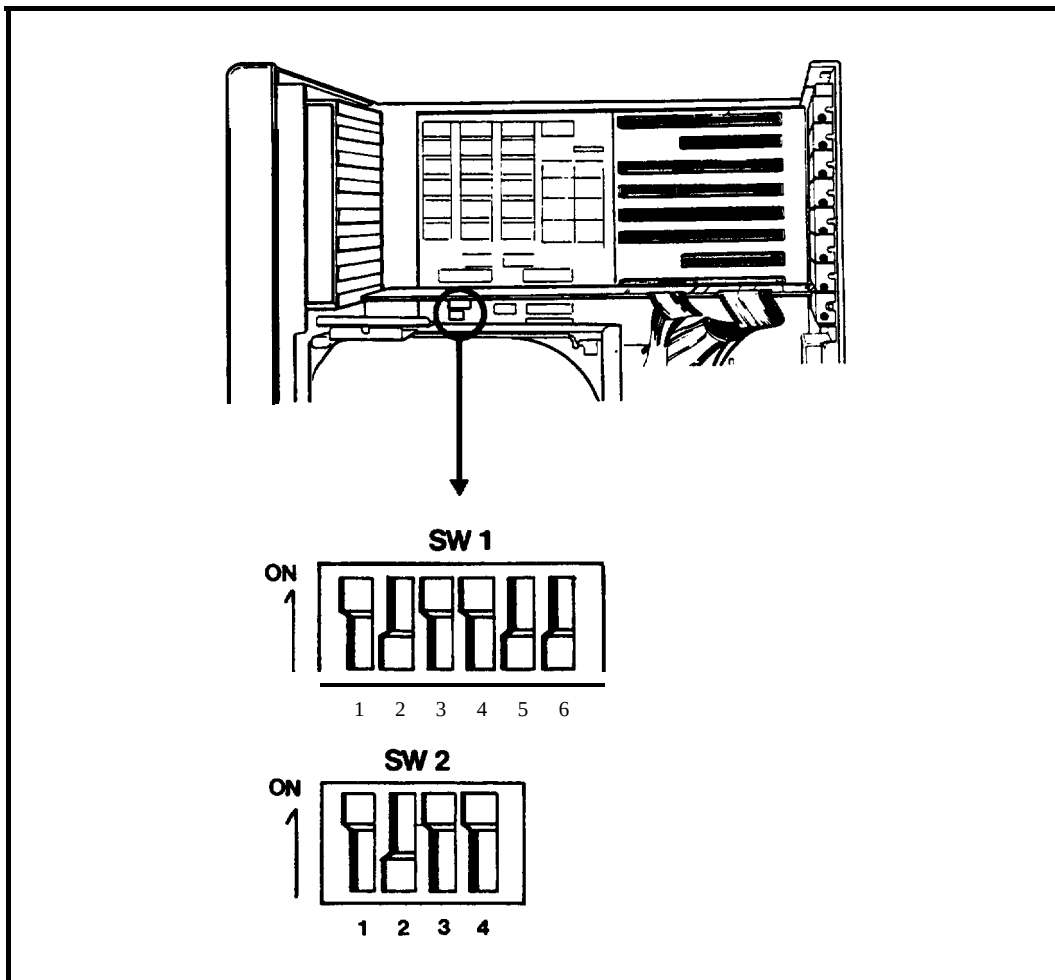


Figure 4-6. Location of DIP switches

Table 4-1. DIP switch functions

Switch	Function	On	Off
1-1	RAM size	640KB	disable
1-2	monitor type	color	monochrome
1-3	PROM size	see Table 4-2	
1-4	" "		
1-5	" "		
1-6	" "		
2-1	serial port	enable	disable
2-2			disable
2-3	floppy disk	enable	disable
2-4	parallel port	enable	disable

Switch 1-1 (memory size) tells your computer how much memory (RAM space) is available. The system always checks the amount of memory available when you reset your computer. The Equity III comes with 640KB of RAM, so be sure this switch is on.

Switch 1-2 (monitor type) tells your system what type of monitor you are using, color or monochrome. If you have a color monitor, turn on switch 1-2. If you have a monochrome monitor, turn off this switch.

Switches 1-3 through 1-6 (PROM size) tell your system which type of PROM is installed, either 27128 or 27256. These switches are set at the factory for the correct PROM in your computer. Table 4-2 shows the proper settings.

Table 4-2. PROM size settings

PROM size	1-3	1-4	1-5	1-6
27128	on	on	Off	off
27256	Off	off	on	on

Switches 2-1 and 2-4 (built-in interface) tell your system what type of interface (serial and parallel) you are using. You can leave both switches on, whether or not you are using the ports.

Some option cards contain serial or parallel interface ports. To use the port on the card, you need to turn off the appropriate DIP switch. For example, if you install an option card with a serial interface that needs to be used as COM1 (the device name usually assigned to the built-in serial port), turn off DIP switch 2-1. Similarly, to disable the built-in parallel port, turn off switch 2-4.

Switch 2-2 is not used, so leave it off.

Switch 2-3 (floppy disk drive interface) enables the floppy disk drive interface in your system and should be on. If you install an external floppy disk controller card at another time, you may want to turn switch 2-3 off to disable the internal floppy disk drive.

Replacing the Cover

After you install (or remove) an option card or change DIP switch settings, follow these steps to replace the main unit's cover:

1. Position the cover on the computer so you leave enough space to slide it back into place.
2. Slide the cover into place so the metal tabs go underneath the top edge of the front panel.
3. To secure the cover, replace the two screws on either side of the main unit.
4. Turn the main unit around so the front faces you and place the monitor back on top, if that is where you keep it. Then reconnect the main unit to the monitor, the keyboard, and any other peripherals you have.
5. Check to be sure the power switch on the main unit is off. Then reconnect the power cable to the back of the main unit and to an electrical outlet.

Using an Epson Mouse

You can use the Epson mouse with special software to enter data and direct a pointer on the screen. For example, you can point to an instruction on the screen and press a button on the mouse to perform the command. Refer to the software manual that comes with the mouse, or the application program, for instructions on how to use it.

If you need to install an option card to use the mouse, follow the instructions in this chapter to install it. Then connect the mouse's cable to the connector on the card. If your mouse does not require a card, connect the cable to the serial port on the rear panel.

To use the mouse, remove the velcro strip that covers the roller. When you are not using it, replace the velcro strip to keep out dust and dirt. Use the mouse only on a hard, flat surface, never on carpet-like material or on a wet surface.

When you use the mouse frequently, clean the roller about every two weeks. First remove the roller cover. If you have an Epson mouse, turn it over, push the roller cover to the side, and lift the cover out. (If you have another type of mouse, turn the cover counterclockwise to remove it.) Then remove the roller, wipe it with a clean, dry cloth, and replace the roller and cover. There are no other user-serviceable parts inside the mouse.

Chapter 5

Troubleshooting

You should not encounter any serious difficulties as you set up and use your Equity III. But if anything out of the ordinary happens, refer to this Chapter. Usually, such a situation requires nothing more than adjusting a cable connection, repeating a software procedure, or resetting the computer.

You can use the suggestions here to solve most problems you may encounter. If the recommended solution does not work, consult an Epson dealer about servicing the computer.

WARNING: If you need to turn off the computer for any reason, always wait at least 5 seconds before you turn it back on. You can damage the Equity III if you turn it off and on rapidly.

The Computer Fails To Start Up

If the computer does not start up when you turn on the power switch, follow these steps to find a solution:

1. Check to see if the red power LED lamp on the front panel is lit. If it is not, remove any diskettes and then turn off the power. Wait 5 seconds, then turn the power back on.
2. If the power lamp still does not light up, turn off the power switch. Check to see that the power cable is securely connected to both the AC inlet on the back panel and the electrical outlet. Then turn the power back on.
3. If the computer still does not start up, check the electrical outlet. Plug a portable lamp into the outlet you are using for the computer and turn it on to see if the outlet supplies power.

The Video Display Does Not Appear

If the computer starts up but no image appears on the screen, follow these steps to solve the problem:

1. Check to see that the power indicator on the video monitor is lit. If it is not, turn off the monitor's power, wait 5 seconds, then turn the power back on. Wait to see if the display screen image appears.
2. Use the controls on the monitor to turn up the brightness and contrast.
3. Remove any diskettes, then turn off the power switches on the monitor and the main unit. Check that the monitor's power cable is securely connected to the electrical outlet and that the monitor cable is properly connected to both the monitor and the main unit. Turn both power switches back on.
4. Turn off the power switches on both the main unit and the monitor. Then check the electrical outlet for power. Plug a portable lamp into the outlet you are using for the monitor and turn it on to see if the outlet supplies power.
5. Follow the instructions in Chapter 4 to remove the cover from the Equity III main unit and check DIP switch 1-2 to be sure it is set correctly for your monitor type. Be sure the computer is off and all cables are disconnected from the main unit before you remove the cover.

The Computer Hangs Up or Freezes

If the computer locks up and does not respond to the keyboard, try the following:

1. Wait a few seconds. Some operations take longer to perform than others. For example, a spreadsheet program takes longer to recalculate an entire spreadsheet than to record one figure. Also, BASIC programs that have a lot of calculations to perform can take several minutes, or even hours. Be aware of the task the computer is performing and judge the time accordingly.
2. Check the key lock to see if it is locked. If it is, the computer does not respond to anything you enter on the keyboard. Turn the key to the vertical position to unlock it.
3. If the computer remains locked up, follow the steps in Chapter 2 under "Resetting the Computer."

Floppy Disk Problems

If you have trouble with a diskette, check the following questions:

1. Is the diskette damaged? Copy the diskette and repeat the operation that caused the problem using the copy. (If you have trouble copying the entire diskette, some of the sectors may be bad. Try to copy single files with the Copy command.) If the operation works using the copy, the original diskette is probably damaged. Make another copy to use as a backup.
2. Have you inserted the right type of diskette? The diskette type is normally shown on the manufacturer's label. In the top drive, which has a storage capacity of 1.2MB, use **5¼-inch**, double-sided, high-density, 96 TPI, soft-sectored diskettes. If you have a second floppy disk drive that is also 1.2MB, use the same type of diskettes in this drive.

If you have a second floppy disk drive that has a storage capacity of **360KB**, use double-sided, double-density, 48 TPI, soft-sectored diskettes in this drive.

The two diskette types are not interchangeable between the different types of drives. You cannot read or write to a highdensity diskette in a 360KB drive. You can read a double-density diskette in a 1.2MB drive, but do not write to it unless you have formatted it **in** a 1.2MB as a 360KB (or 320KB) diskette. See "Choosing Diskettes for the Equity III" and "Drive and diskette incompatibility" in Chapter 3.

3. Is the diskette write-protected? There may be a write-protect tab over the notch on the side of the diskette. Before you remove the tab, check the directory to see what files the diskette contains-it may contain information you do not want to change or lose. (Your operating system manual tells you what command displays a directory.) Although you should normally write-protect all program diskettes, some programs store temporary files on the diskette. These programs do not work if you write-protect the diskette.

Hard Disk Problems

If you have problems with your hard disk when you first start to use it, check to see if it has been set up properly. See “Using a Hard Disk” in Chapter 3 and refer to your MS-DOS manual.

If you cannot access data stored on your hard disk, you may have accidentally repartitioned or reformatted part or all of the hard disk. If you have not done so and your hard disk does not function properly, have an authorized Epson service center check your hard disk. Never open the air-tight container that encloses the recording disk.

Software Problems

If you have trouble with a software program, check the following list of possible problems and solutions:

1. The software program does not start. Check that you are following the correct procedure for your operating system. Be sure you insert the system diskette in drive A (the top drive).
2. An application routine does not work. Refer to the software manual and complete the routine according to the instructions. If this does not work, reset the computer (as described in Chapter 2 under “Resetting the Computer”), reload the program, and try the routine again.

To operate properly, some programs require certain DIP switch settings. Be sure that the DIP switches inside the main unit are set for your configuration. Chapter 4 describes how to remove the main unit’s cover and set the DIP switches. When you turn on the computer again, the new settings take effect.

Printer Problems

Your printer manual describes methods to solve most printer problems. If your printer does not work correctly right after you install it, make sure the printer has power and **connects** to the computer properly. The printer manual tells you how to **connect** your printer.

If you have a serial printer, or if you have problems with paper feeding, check the printer manual for the printer’s DIP switch settings. The DIP switches on a printer help it communicate properly with the computer.

Option Card Problems

If you install an option card and get unexpected results, check the following questions:

1. Is the option card installed correctly?
2. Did you follow the setup and operation procedures in the option card instructions?
3. Did you set any necessary DIP switches or jumpers on the option card? See your option card instructions.
4. Did you set any necessary DIP switches in the main unit? See “Setting the DIP Switches” in Chapter 4.
5. If you added an external device, did you use the proper cable to connect the peripheral to the port or option card connector on the rear panel?
6. Did you perform any necessary post-installation setup procedures for the operating system? See your diagnostics, MS-DOS, or other software manual for instructions.

Appendix A

Equity III Specifications

CPU and Memory

16-bit CPU	80286 microprocessor, 6 MHz clockrate Real address (@O&compatible) and protected virtual address (multi-tasking or multi-user) modes 24-bit address and 16-bit data bus
Main memory	640KB RAM on main system board; expandable to 15.5MB maximum with expansion cards
ROM	32KB
Math coprocessor	80287 support (optional)

Controllers

Floppy disk	Supports up to two drives available in two formats: double-density (360KB) or high-density (1.2MB); controller on main system board
Hard disk	Supports up to two drives available in multiple formats (including 20MB and 40MB); installs in option slot

Interfaces

serial	RS-232C, programmable, asynchronous, DB-9P male connector
Printer	Standard 8-bit parallel, DB-25S female connector
Option slots	Eight IBM PC-compatible input/output expansion slots: six with X-bit bus and two with 8-bit bus; seven slots available in base configuration

Interfaces (continued)

Speaker	Internal
Clock / calendar / RAM	Real-time clock, calendar, and 50 byte CMOS RAM for configuration; battery backup

Power Supply

Switching type, fan-cooled, 115 VAC, 200 w; +5 VDC, +12 VDC, -5 VDC, -12 VDC

Mass Storage

Four drives maximum

Standard	5¼-inch , half-height floppy disk drive; double-sided, high-density, 1.2MB storage capacity
Optional	5¼-inch , half-height floppy disk drive; double-sided, high-density, 1.2MB storage capacity
Optional	W-inch, half-height floppy disk drive; double-sided, double-density, 360KB storage capacity
Optional	5¼-inch , half-height internal hard disk drive; 20MB storage capacity (formatted) with controller
Optional	5¼-inch , half-height internal hard disk drive; 40MB, storage capacity (formatted)

Keyboard

	Detachable, two positions, 84 sculpted keys
Layout	56-key QWERTY main keyboard; 18-key numeric/cursor pad; 10 function keys
Function keys	Three levels (normal/shift/alternate), userdefinable

Environmental Requirements

Temperature	Operating range: 41° to 104°F (5° to 35°C)
	Storage range: 22° to 158°F (-20° to 60°C)
Humidity	operating range: 20% to 80%, non-condensing
	Storage range: 20% to 90%, non-condensing

Physical Characteristics (CPU only)

Width, inches (mm)	21.26 (540)
Depth, inches (mm)	16.93 (430)
Height, inches (mm)	6.95 (167.5)
Weight, pounds (kg)	33.22 (15.1) Single floppy disk drive
	36.96 (16.8) Single floppy disk drive and one 20MB hard disk

Power Requirements

115 VAC $\pm$ 20%, 60 Hz, 5 amps

Options

Monochrome video card	Supports Epson- or IBM PC-compatible monochrome monitor; 80-character x 25-line display; 9 x 14 character block; installs in option slot
TTL monochrome monitor (12-inch diagonal)	High-persistence, green, P-39 phosphor screen; etched surface to reduce glare; 22 MHz video bandwidth; 35 W
Color/graphics video card	Supports Epson- or IBM PC-compatible RGB color or composite video monitors; 40-character x 25-line display (low-resolution text); 80-character x 25-line display (high-resolution text); 640 x 200 (high-resolution graphics); 8 x 8 character block; installs in option slot

Options (continued)

RGB color
monitor (13-inch
diagonal)

High-contrast screen; 16 colors; etched
surface to reduce glare; 18 MHZ video
diagonal) bandwidth

Epson mouse/
interface card

Two-button mouse with option card;
installs in option slot

Glossary

ASCII

American Standard Code for Information Interchange. A standardized coding system for representing characters, such as numbers, letters, and graphic symbols. An ASCII character occupies one byte of storage. Files transmitted in ASCII code can be used by many different computers, printers, and programs.

Asynchronous

A method of data transmission in which one machine sends data one character at a time to another, without either machine preparing for the transmission.

Backup

An extra copy of a program, data file, or disk, kept in case your working copy is damaged or lost.

Bit

A binary digit (0 or 1). The smallest unit of computer storage. The value of a bit represents the presence (1) or absence (0) of an electric charge.

Boot

To load a program or an operating system.

Byte

A sequence or group of eight bits that represents one character.

Character

Anything that can print in a single space on the page or the screen. Includes numbers, letters, punctuation marks, and graphic symbols.

CMOS

Complementary Metal-Oxide Semiconductor. A method for making silicon chips.

Code

A system of symbols for representing data or instructions. Also any software program or part of a program.

Command

An instruction you enter on the keyboard to direct your computer to perform a specific function.

Configuration

The particular setup of a group of components. For example, a CPU with two floppy disk drives, connected to a monochrome monitor and a printer is a typical system configuration.

Control code

A command (generated when you hold down Ctrl and press another key on the keyboard) that instructs your computer to perform a specific function.

CPU

Central Processing Unit. The piece of hardware which interprets instructions, performs the tasks you indicate, keeps track of stored data, and controls all input and output operations.

Cursor

The highlighted marker which shows your position on the screen and moves as you enter and delete data.

Data

Information stored or processed by a computer.

Data diskette

A formatted diskette used to store files.

DIP switches

Small switches on a piece of hardware such as a CPU, a printer, or an option card. DIP switch settings control various functions and provide a system with information about itself. DIP stands for Dual In-Line Package.

Directory

A list of the files stored on a disk or a part of a disk.

Disk

The collective term for both hard disks and floppy disks (diskettes).

Disk drive

The physical device which allows the computer to read from and write to a disk. A floppy disk drive has a disk slot on the front panel of the main unit into which you insert diskettes. A hard disk is permanently fixed inside the main unit, hidden behind the front panel.

Diskette

A flat piece of flexible plastic coated with magnetic material and used to store data permanently. Also called floppy disk.

DOS

The Disk Operating System that controls the computer's input and output functions. See Operating system.

Double-density

A type of diskette format that allows you to store twice as much data as the standard density format. A double-density diskette for the Equity III has a storage capacity of 360KB.

File

A group of related pieces of information called records, or entries, stored together on disk. Text files consist of words and sentences. Program files consist of code and are used by computers to interpret and carry out instructions.

Floppy disk

See Diskette.

Format

To prepare a new disk (or erase an old one) so that it can receive information. Formatting a disk divides it into tracks and sectors and creates addressable locations on it.

GW-BASIC

Microsoft's extended version of the Beginner's All-purpose Symbolic Instruction Code. A programming language designed to be easy to use and understand.

Hard disk

The enclosed unit used to store data permanently. Unlike a floppy disk, it is fixed in place. It can process data more rapidly and store many more files than a floppy disk.

Hardware

Any physical component of a computer system, such as a monitor, printer, keyboard, or CPU.

High-density

A type of diskette format that allows you to store up to 1.2MB of data.

Input/output port

see Port.

Interface

A physical or software connection used to transmit data between equipment or programs.

Kilobyte (KB)

A unit used to measure storage space (in a computer's memory or on a disk). One kilobyte equals 1024 bytes.

LED

Light Emitting Diode. A substance that illuminates when electricity passes through it, like the indicator lights on the front panel of the Equity III.

Main unit

The Equity III computer.

Megabyte (MB)

A unit used to measure storage space (in a computer's memory or on a disk). One megabyte equals 1,048,576 bytes.

Memory

The area where your computer stores data. Memory contents can be -permanent and inalterable (ROM) or temporary (RAM).

Microprocessor

A small version of a CPU contained on one semiconductor chip.

Modem

A device which allows a computer to transmit signals over telephone lines so it can send and receive data. Modem stands for MODulator/DEModulator.

Monitor

The piece of hardware that contains the screen and displays information.

Monochrome monitor

A monitor that displays in only one color, such as green or amber, as opposed to a color monitor which can display in several colors.

Mouse

A device used (as an alternative to a keyboard) to control a pointer on the screen and operate a program.

MS-DOS

An operating system from Microsoft. See DOS, Operating system.

Operating system

A collection of programs that allow a computer to control its operations. The operating system determines how programs run on the computer and supervises all input and output-for example, MS-DOS.

Option card

A card you install inside the Equity III main unit to provide additional capabilities, such as more memory, a hard disk drive, or a mouse.

Parallel

The type of interface which transmits data in groups of bits. See Interface, Serial.

Partition

To divide a hard disk drive into separate sections for use by different operating systems.

Peripheral

A device (such as a printer or a modem) connected to a computer that depends on the computer for its operation.

Port

A physical input/output socket on a computer where you can connect a peripheral.

Program

A disk file that contains coded instructions and tells a computer what to do and how to do it.

PROM

Programmable Read-Only Memory. A PROM is a ROM that can be altered.

RAM

Random Access Memory. The part of memory that a computer can both read and write to. The programs you use are temporarily stored in RAM. All data stored in RAM is erased when you turn off the power.

Read

To copy data from one area to another. For example, when you open a text file stored on disk, the computer reads the data from the disk and displays it on the screen.

Read/write head

The physical device inside a disk drive that reads and records data on the magnetic surface of a disk.

Reset

To reload a computer's operating system so that you can retry a task or begin using a different operating system. Resetting clears RAM.

RGB

Red Green Blue. An RGB monitor displays in high-resolution color.

ROM

Read Only Memory. A portion of memory that can only be read and cannot be used for temporary storage. ROM retains its contents even when you turn off the power.

RS-232C

A widely-used, standard type of serial interface. You can easily connect RS-232C-compatible devices to the Equity III.

Sector

A contiguous section of a disk track that provides an address at which the computer can access data.

self-test

The initial diagnostics procedures a system performs to check its hardware.

serial

The type of interface which transmits data one bit at a time. See Interface and Parallel.

software

The programs that enable your computer to perform the tasks and functions you indicate.

System diskette

A diskette that contains the operating system.

Tracks

Addressable concentric circles on a diskette, resembling the grooves on a record, which help to divide the diskette into separate accessible areas. There are 40 tracks on each side of a double-sided, double-density diskette and 80 tracks on each side of a double-sided, high-density diskette.

Write

To store data on a disk.

Write-protect

To prevent a diskette from being overwritten by placing a write-protect tab over the notch on the side of the diskette. When a diskette is write-protected, you cannot erase, change, or record over its contents.

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